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NOTES ON THE NATURE AND ORIGIN OF THE ADJECTIVE IN TAMIL

M. Andronov, Moscow

No other problem of the Tamil grammar has probably called forth such an amount of contradiction and dispute among linguists as that of the nature of the adjective. Doubts were expressed not only in regard to formal boundaries and morphological features of this class of words, but even in regard to its existence as a separate part of speech in general.

The latter view, though unexpected and doubtful in the eyes of those who have limited themselves to the study of Modern Tamil alone, may become justified when one turns to facts of Classical Tamil: in any case the classical Tamil grammars. "Tolkāppiyam" and "Naṉṉūl" do not enumerate the adjective among separate parts of speech in the language of that period.

It is true that in the modern language the situation is different. However, this fact does not prevent some students of Tamil grammar from denying the existence of adjectives in the modern language too (which is probably the result of the influence of the classical tradition). Here belong G. U. Pope[1], Āṟumukanāvalar[2], J. Bloch[3], T. P. Meenakshisundaran[4], A. M. Mervart[5] and others.

An opposite tendency to transfer norms of the modern language on the grammar of Classical Tamil is found in the views of another group of linguists who made an attempt to postulate the existence of the adjective as a separate part of speech not only in Modern Tamil but (in defiance of "Tolkāppiyam" and "Naṉṉūl") in the classical language as well. This point of view is most clearly expressed in a number of papers and reviews by T. Burrow[6], A. Master[7], and K. Zvelebil[8]. It is also adhered to in T. Burrow and M. B. Emeneau's "Dravidian Etymological Dictionary"[9].

Finally, even those who describe the adjectives of Modern Tamil are not united in the enumeration of forms to be included into this part of speech. The only form that has raised no objections so far is the adjective in -a. As P. Jothimutthu says, "generally adjectives in Tamil end in a"[10]. Other authors agree with this and follow A. Arden in saying that "Tamil adjectives are indeclinable and are always prefixed to the noun which they qualify; as nalla kutiraikaḷukku 'to good horses"[11].

The study of the distribution of forms in -a proves that in the modern language they actually constitute a separate class of unbound words. These words do not vary and freely function as prepositive attributes irrespective of the form of a following word. This is quite sufficient for rejecting - as far as the modern language is concerned - the view advocated by G. U. Pope and J. Bloch and for the recognition of such forms as a class of separate words known as the adjective.

Let us examine now if other forms of the attribute, not infrequently included into the adjective, can meet these demands. To start with, one must drop from this list constructions of substantives (and other nouns) with participles (āṉa 'which became', uḷḷa 'which comprises, includes', mikka 'which abounded', etc.) as well as crude nominal bases:[12] the first must be excluded as phrases formed of two separate words that belong to different parts of speech (e. g. palam -āṉa 'strong', 'which became something strong', cakti-y-uḷḷa 'mighty', which contains strength'), the second, as elements of composite words, i. e. as segments of speech that are shorter than words and therefore not liable to classification into parts of speech in isolation from composite words they form an element of (e. g. mara-p-peṭṭi 'a wooden box', tōṭṭattu-k-katavu 'a garden gate').

There are no more grounds to regard as separate words such bound morphemes as peru-/perum-/pēr- 'big', pacu-/pacum-/pāc-/pacc-/paim- 'green', etc.[13], which are also segments of speech shorter than the word. Their bound character is evident from the interrelation existing between the specific form of any particular morpheme and the nature of the initial sound of the following word: thus, peru- is used before sonants, perum-, before noise consonants, pēr-, before vowels and some sonants (e. g. peru-vila 'big price', perum-pāvi 'great sinner', pēr-utavi 'great help'), etc.[14]

The bound character of these morphemes, whose distribution is regulated by the word-building norms of the Tamil language, was first noted by C. Beschi who stressed that "all these forms cannot be indiscriminately used with all the nouns"[15]. He underlined their paradigmatic irregularity and emphasized that some "adjectives" may be formed in each of the described ways, whereas other - only in a few of them. Following "Naṉṉūl" C. Beschi points out that here "no rules can be given and we must observe the practice of ancient writers"[16].

When such forms end in noise consonants, e. g., pāc-/ pac(c)- 'green', cit-/cit (t)- 'small', neṭ (ṭ)- 'long', their bound character can be seen particularly well : according to the rules of the Tamil phonetics (cf. sutras 69, 70, 78 in "Eẓuttatikāram" of Tolkāppiyaṉār), free words in Tamil may end only in vowels and sonants[17].

As only words may be classified into parts of speech rather than their parts - roots and other morphemes, the problem of the part of speech to which forms like ciṟu-/ciṟum-/ciṟ-/ciṟṟ- belong may not even be posed : they belong to no part of speech whatever.

Like nominal bases of the type mara- in mara-p-peṭṭi 'a wooden box', the forms under study are an element of a composite word. That is why, as C. Beschi[18] rightly notes, they are generally written in one word with the second component and are not given in dictionaries as separate items.

All these remarks lead us to the conclusion that the point of view advocated by T. Burrow,[19] A. Master[20] and K. Zvelebil[21] are based on the recognition of bound morphemes as separate words cannot be accepted in modern linguistics, while their criticism of F. Kittel, J. Bloch, S. Vaiyapuri Pillai and others cannot be considered valid.

The last in the list of forms sometimes erroneously reckoned among adjectives stand peculiar personal nouns of Classical Tamil generally termed viṉaikkuṟippu in Tamil grammatical literature or appellative nouns, conjugated nouns, noms pronominalisés, in European Dravidology.

Like substantives personal nouns distinguish the gender, number and case, but unlike them personal nouns posses, the category of person. Primary personal nouns are formed with personal suffixes directly from nominal bases, whereas derivative personal nouns are formed from fully formed substantives (and other nouns); cf; e. g., nallēṉ 'good I', 'I who am good', peṇṭirem 'womanlike we', 'we who resemble women' (with peṇṭir 'women', peṇṭu 'woman'), etc.[22]

The classical Tamil grammars regarded personal nouns as a subclass of verbs (probably because of their frequent use in the role of the predicate). C. Beschi suggested that they should be regarded as a separate part of speech, the appellative noun (probably because of their frequent use in this function too). Afterwards, H. Beythan,[23] and later T. Burrow[24] and K. Zvelebil[25] tried to interpret them as a special indeclinable predicative form of the adjective, which, as some of them maintained, was no nominal part of speech at all[26]. Thus e. g., K. Zvelebil described adjectives as "words which cannot be inflected for case, but may be, nevertheless, inflected for person, number and gender......, cf. nallēm : nallōr : nallavaṉ : nallavaḷ"[27]. "Thus it is clear, he concludes, that they cannot be regarded as nouns"[28].

It is necessary to emphasize, however, that the allegation that personal nouns are not declined for cases and are used exclusively as predicates does not conform to facts.[29] In classical Tamil texts one can find a good number of instances when personal nouns of any person are used in oblique cases with respective syntactical functions: Cf,, e. g., Periyāṉē ciṟiyēṉai āṭkoṇṭa peykaḷaṟkīḷ...... (Tiruvāc., 5, 18) 'O Great Lord, beneath thy feet that fascinated me who am so paltry...', Citaittal vallaiyāl neṭuntakai... (Puṟam, 37) 'O glorious king, let everything be destroyed by thee who art so mighty...', Nallāḷōṭu nayappuṟa .. (Tiruvāc., 5, 12) 'Having fallen in love with her who is so good .....', Ciṟiyēṉ pavam tīrppavaṉē...... (Tiruvāc., 6, 7) 'O Siva, thou wilt stop my earthly births...' 30.

However, this is not even the point, irrespective of their capability to be declined personal nouns cannot be regarded as inflectional forms of the adjective (or other nouns), since their connection is purely derivative[31]. As noted still by Academician F. F. Fortunatov, "inflectional forms are only those forms of complete separate words which express difference in relations between one objects of thought and other objects of thought in the sentence"[32]. Meanwhile, it is sufficient to compare such words as nalla 'good' and nallāṉ 'a good man' or nāy 'a dog' and nāyēṉ 'doglike I' in order to note that these are not inflectional forms of one word, but different words of distinct lexical meaning, i. e. words denoting different "objects of thought". Thus, e. g., the word nāy denotes an animal whereas the word nāyēṉ denotes a person, the word nalla denotes a quality irrespective of any person or object that may possess it, whereas the word nallāṉ denotes a man and is objective in its meaning, etc.

In addition, adjectives like nalla 'good', periya 'big', ciṟiya 'small', etc., are used in the modern language, whereas forms like nallēṉ 'good I', periyāy 'big thou', ciṟiyāṉ 'small he', 'a small man' are met with only in the classical language and, for this reason alone, cannot belong to the same paradigmatic class.

To sum up, the only form of the adjective in Tamil is that found in words like nalla, periya, etc.

The origin and primary nature of such forms, which obtained the status of the adjective only in Modern Tamil, will become clear from their comparison with the paradigm of the respective personal nouns of Classical Tamil; cf., e. g.

		Singular	*Plural*
1st Person		nallēṉ 'good I'	nallēm 'good we'
2nd Person		nallay 'good thou'	nallīr 'good you'
3rd Person	Masc.	nallāṉ 'a good man'	nallār 'good persons'
	Fem.	nallāḷ 'a good woman'	
	Neu.	naṉṟu 'a good thing'	nalla 'good things'

In Classical Tamil forms of the Nominative case like nalla (as well as forms of other persons) would be used both in the substantival and attributive functions; cf., e. g., nalla illa vākupavāl......(Puṟam, 7) 'because[3] there are no[2] good things[1]' (nalla in the substantival function), oppuraviṉ nalla piṟa... (Tirukkuṟaḷ, 213) 'other things[3] as good[2] as philanthropy[1]' (nalla in the attributive function), etc.[33]

In the modern language personal nouns of the first and second persons got out of use (a few of them like aṭiyēṉ 'I am your obedient servant', tēvarīr 'your worship', aṉpuṭaiyīr 'dear sir' remain in use as stock phrases). Personal nouns of the third person have been retained by the modern language, but following the loss of their personal characteristics (since their opposition with personal nouns of other persons disappeard) they ceased to be a separate part of speech and turned into one of derivation classes of substantives.

Neuter personal nouns of the third person plural, like nalla, ciṟiya, periya, etc., have lost in the modern language their capability of being used in the substantival function. They lost their original categories of person, gender and number and developed capability of being used as indeclinable attributes to other nouns, without distinguishing number or gender[34].

In conclusion it is necessary to stress that at least two historic forms of Tamil, classical and modern, should be distinguished when the problem of the adjective is under study. As regards Classical Tamil, it is necessary to agree with Tolkāppiyaṉār and Pavaṇanti who did not establish the adjective as a separate part of speech[35]. As far as Modern Tamil is concerned, the existence of the adjective is a fact:[36] objections must be raised to the erroneous extention of this part of speech by including nominal bases and other morphemes that are not independent words.

FOOTNOTES

1. "In Tamil there are no adjectives, strictly so called" (G. U. Pope, A handbook of the ordinary dialect of the Tamil language, Oxford, 1911, p. 105).

2. Āṟumukanāvalar, Ilakkaṇaccurukkam, Ceṉṉai, 1957.

3. "Il n'y a pas d'adjectifs proprement dits en dravidien" (J. Bloch, Structure grammaticale des longues dravidiennes Paris, 1946, p. 32).

4. T. P. Meenakshisundaran, A History of Tamil language, Poona 1965, pp. 46-47; T. P. Meenakshisundaran, Tamil, New Delhi 1967, pp. 8-9.

5. A, M. Mervart, Grammatika tamiljskogo razgovornogo yazyka, Leningrad, 1929, p. 55.

6. T. Burrow, Review of Structure grammaticale des langues dravidiennes par Jules Bloch, BSOAS, 12, 1, 1947, pp. 254-255.

7. A. Master, Review of Structure grammaticale des langues dravidiennes par Jules Bloch, JRAS, 1949, 1-2, p. 107.

8. K. Zvelebil, Review of M. Andronov's Tamil language, Ar. Or., 29, 1961, pp. 705-706; K. Zvelebil, More about adverbs and adjectives in Tamil, TC, 9, 3, 1961, pp. 286-287.

9. T. Burrow and M. B. Emeneau, A Dravidian etymological dictionary, Oxford, 1961-1968. Cf. our review in "Peoples of Aisa and Africa", 1964, No. 5, p. 201.

10. P. Jothimuthu, A guide to Tamil, Madras, 1956, p. 47.

11. A. Arden, A progressive grammar of the Tamil language, Madras, 1954, p. 108. Cf. also P. Meile, Introduction au tamoul, Paris, 1945, pp. 180-181; H. Beythan, Praktische Grammatic der Tamil sprache, Leipzig, 1943, S. 131; S. Agesthialingom, A generative grammar of Tamil, Annamalainagar, 1965, pp. 152-153.

12. H. Beythan, ibid., SS. 133-134; A. Arden, ibid., pp. 109-110; M. Shanmugam Pillai, Spoken Tamil, Pt 1, Annamalainagar, 1965, pp. 152-153.

13. C. Beschi, A grammar of the high dialect of the Tamil language, Madras, 1828, pp. 33; H. Beythan, ibid., SS. 131–133.

14. Here cīṟ-/ciṟ-, pāc-/pac-, pēr-/per- are two forms, long and short, of one and the same base (cf. Bh. Krishnamurti, The history of vowel-length in Telugu verbal bases, JAOS, 75, 1955). -u- in ciṟu-, pacu-, peru- is a derivative suffix, -m- in ciṟum-, pacum-, perum- is

a connective consonant (a euphonic increment). Double consonant, in ciṟṟ-, pacc-, etc., are due to the operation of sandhi (a short closed syllable before a vowel). Finally, -m- in paim- is a euphonic increment‘ while pai- is an archaic form of the base, with -c- [-s-] < -i- [-y-], like in uciru < uyir ‘breath’, ocar- < uyar- ‘to rise’, pacaṅka < paiyaṉkaḷ ‘children’ (cf. M. Andronov, Colloquial Tamil and its dialects, Moscow, 1962, p. 17).

15. C. Beschi, ibid., p. 34.

16. Ibid

17. Cīṟ-/ciṟ-, etc., cannot be regarded as forms that lost their final -u- before a vowel of the following word: in forms like ciṟu- (with a short vowel in the root) -u- is not liable to elision and in forms like cīṟ- it is not to be used at all. Cf. also M. Andronov, Dravidian languages, Moscow, 1970, p. 83.

18. C. Beschi, Ibid., p. 34.

19. Cf.: “As far as the ancient form of the South Dravidian is concerned the non-recognition of the adjective as a separate part of speech is mistaken. In early Tamil and Kanarese, for instance, adjectives are both numerous and clearly distinguished morphologically from the noun. The difference is that they cannot take the case-terminations proper, that is to say, they cannot be used as abstract nouns: Ta. peru means ‘great’ and perumai means ‘greatness’, and the distinction is quite clear. It is necessary to insist on this, since the non-recognition of the adjective has had some unfortunate practical consequences. Kittel, in his Kanarese dictionary translates all his adjectives as abstract nouns, which is incorrect, as well as being a round-about and clumsy way of expounding the language. The Tamil Lexicon does even worse, and omits systematically the whole category of adjectives, so that the reader looks in vain for some of the commonest words in the language. This is largely because in the modern languages the adjective has tended to be eliminated, but in older languages adjectives are common and easily distinguished from other parts of speech” (T. Burrow, ibid., pp. 254-255).

20. Cf.: “The English reader will be puzzled by the statement that Dravidian has no adjectives. In spite of Kittel (who was a German), English Grammatical theory admits of Dravidian adjectives and Dravidian grammar distinguishes them from nouns” (A Master, ibid., p. 107).

21. According to K. Zvelebil, the adjectives proper look like “Peru, ciṟu, aru” (K. Zvelebil, Review of M. Andronov’s Tamil language, p. 706.)

22. For more detail cf. M. Andronov, A standard grammar of modern and classical Tamil, Madras, 1969, pp. 122-124.

23. H. Beythan, ibid., SS. 134-135.

24. "The addition of pronominal terminations is common to nouns, adjectives, and verbs" (T. Burrow, ibid., p. 255)

25. K. Zvelebil, More about adverbs and adjectives in Tamil, pp. 286-287.

26. "Tamil adjectives are not even nouns" (K. Zvelebil, ibid. p. 286).

27. K. Zvelebil, ibid., p. 287.

28. Ibid

29. This erroneous idea is most probably borrowed by T. Burrow and K. Zvelebil from C. Beschi, (cf. C. Beschi, ibid., p. 28). G. U. Pope however, corrected C. Beschi's mistake in his grammar written in Tamil : there he especially pointed out that personal nouns "take suffixes of case, person, number and gender" (G. U. Pope, A larger grammar of the Tamil language in both its dialects, Madras, 1858, p. 77) and gave a paradigm of their declension.

30. For other examples see M. Andronov, A standard grammar of modern and classical Tamil, pp. 124-125.

31. Cf. also C. Beschi who says: "So irregular, indeed, is the formation of appellatives, that it is impossible to fix it by any certain rules" (C. Beschi, ibid., p. 23).

32. F. F. Fortunatov, Collected papers, Volume I, Moscow, 1956, p. 155.

33. The Tamil grammatical school regards neuter personal nouns of the third person plural in the substantival function as viṉaikkuṟippu and in the attributive function, as participles (cf. Iḷampūraṇam, Cēṉāvaraiyam and other medieval commentaries; also P. S. Subrahmanya Sastri, Tolkāppiyam-Collatikāram, Annamalainagar, 1945, pp. 93-94; T. P. Meenakshisundaram, A history of Tamil language, p. 86). This, however, can have no grounds, as the described forms do not differ functionally from other personal nouns, which nevertheless, are never divided in this way. Besides, the existence of participles in the system of personal nouns is hardly possible, as the latter lack verbal properties, particularly modality.

Similarly, there are no grounds for regarding derivative neuter personal nouns of the third person plural in the attributive function as a peculiar form of the Plural Genitive in -a, which is said to be used only before a qualified word in plural (cf. "Nan̲n̲ūl", 300: "Āṟan̲ ... pan̲maik kavvu murupām" 'A is a suffix of the Genitive Plural ... '). Firstly, such a treatment disturbs the consistency in the description of the Tamil grammatical system, tearing off one inflectional form from the rest of the paradigm. Secondly, it is incorrect in essence, as the suffix -a frequently expresses no meaning of the Genitive case; cf., ceviya veruvai (Aiṅkuṟunūṟu, 335) '(red-) eared eagles' (with cevi 'ear'), kan̲iya vālam (ibid., 303) 'fruit-bearing banyans' (with kan̲i 'fruit'), kaṇṭaḷ vēliya ūr (Naṟṟiṇai, 74) 'villages with fences made of kaṇṭaḷ' (with vēli 'fence'), etc. (see also P. S. Subrahmanya Sastri, ibid., p. 93; R. Caldwell, A comparative grammar of the Dravidian or South-Indian family of languages, 3rd ed., London, 1913, pp. 248, 298).

On the contrary, our interpretation explains not only the semantics of such forms (e. g., ceviya 'those which possess ears', kan̲iya 'those which possess fruits', vēliya 'those which possess fences'), but also the meaning of plurality that they impart to the qualified word.

34. That is why, in particular, K. Zvelebil makes a mistake when he says that "such adjectives as periya, ciṟiya, ariya, paciya ... had never the status of nouns in Tamil" (K. Zvelebil, Review of M. Andronov's Tamil language, p. 706).

35. Therefore an attempt to establish the adjective (understood as forms of the nalla type in the attributive function) in Classical Tamil itself (cf. V. I. Subramoniam, Index of PuRanaanuuRu, Trivandrum, 1962, p. IV) is hardly acceptable: in the classical language these forms retained their agreement in person, number and gender with words they qualify and, thus, did not yet cease to be personal nouns.

36. It is remarkable that the historic development of personal nouns in -a (like nalla) and their transformation into adjectives finds its analogy in a similar development of participles in -a, which originally also could be used in two functions, the substantival (as neuter participial nouns of the third person plural) and attributive (as pure participles).

Paper submitted in the Seminar on Dravidian Linguistics III. Annamalai Nagar, 1971.

TWO MALAYALAM PHONEMES

L. V. Ramaswami Aiyar

I

The "spread-contact" dental[1] nasal and the "point-contact" alveolar nasal are two different phonemes in Malayāḷam and in Old Tamil. Modern Tamil (both when it is spoken and when old texts are read) does not have this phonemic difference, since the value given for the sound is (except in the group *'nd* where the "spread-contact" value is preserved for the nasal on account of the *d* following) that of "point contact" alveolar ṉ, though correct writing distinguishes the symbols for *'n* and ṉ. In Kannaḍa and in Telugu, neither the linguistic tradition nor the modern colloquial evaluation recognizes any such phonemic difference; and in both these languages the value given for what is called the *dantya n* is that of a "point-contact" pre-alveolar or alveolar, except in the groups *'nt 'nth, 'nd, 'ndh* where the *'n* may be regarded as a subsidiary member of the phoneme *n*. Among non-literary Dravidian speeches, Tuḷu (spoken in its native habitat, viz., South Canara) resembles in this respect Kannaḍa and Telugu. Nor does any of the other non-literary Dravidian speeches evidence the phonemic difference, so far as one can judge from the available accounts of the sounds of these speeches.

II

The "spread-contact" dental of Malayāḷam is produced by the spreading of the tip of the tongue (and the portion of the blade, immediately behind the tip) on the upper teeth and the roots of the teeth (Fig. 1).

The "point-contact" ṉ is produced by the contact of a considerably reduced area of the tip or the blade of the tongue on the alveolar region. (Fig. 2).

The fundamental difference between *'n* and ṉ both in phonation and in acoustic appeal is due to the "spread-contact" phonation of the former and the considerably reduced area of occlusion in the production of the latter.

Thus in the sound-stock of Malayāḷam there are two distinct series of homorganic sounds:—

1. The "spread-contact" plosives *t* (voiceless), *d* (voiced) and the "spread-contact" *′n* (homorganic with *t* and *d*).

2. The "point-contact" stops ṯ (voiceless), ḏ (voiced) and the corresponding nasal ṉ.

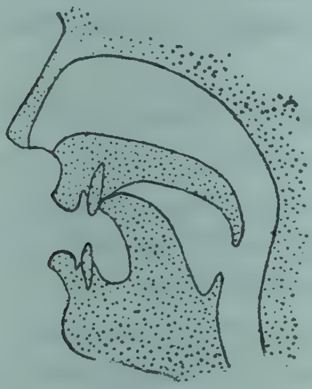

Fig. 1.
"Spread-contact" denti-alveolar

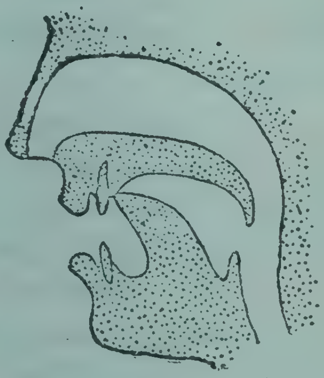

Fig. 2.
"Point-contact" alveolar.

III

The following pairs of words would illustrate the phonemic difference between the sounds under reference.

MALAYĀḶAM

ta′n′nē	'even by (or after) having given'.
taṉṉē	'alone', 'even self'.
e′n′nē	'even thus', 'even so', etc.
eṉṉē	'me' (accusative, with final vowel lengthened on account of semantic emphasis)
e′n′nāl	'but', etc.
eṉṉāl	'by me'.
mu′n′nāḷ	'three days'.
muṉṉāḷ	'chief person'.
ti′n′nāṉ	(Old Mal.) 'he ate'.
tiṉṉāṉ	'for eating'.
ma′n′naṉ	(from IA manda) 'dull-witted fellow'.
maṉṉaṉ	'ruler', 'king'
mā′n′nyam	(from OIA māndya) 'sluggishness'
māṉṉyam	(from OIA mānya) 'land exempt from tax, given as a mark of honour'.

OLD TAMIL

a′n′nāy	‘that dog’.
aṉṉāy	
e′n′nilam	‘which land’.
eṉṉilam	‘my land’.

Though doubled or long sounds alone are involved here, one cannot refuse to give recognition to the phonemic difference, since it is the difference in the phonation of the sounds concerned that determines the meaning.

Again, it may be noted that the phonemic difference is revealed in forms affected by sandhi (external and internal). Within the so-called "pure" bases, verbal and nominal, the sounds ′n and ṉ occur (in Old Tam. and in Mal.) only in clearly marked-off contexts. In Old Tam., ′n occurs in initial positions, as an absolute final in two old words *poru′n* and *veri′n*, and medially in the group *′nd*; while ṉ occurs as an absolute final, medially as a short and a doubled or long sound, and in the group ṉḏ. In Mal., owing to the evolution of forms, there are a few variations: *poru′n* and *veri′n* of Old Tam. are non-existent; the old groups ṉḏ and *′nd* changed to *′n′n*. Apart from these variations, the rules of Old Tamil regarding the contexts in which *′n* and ṉ occur, hold good for Mal. also.

IV

1. Tolkāppiyam the Old Tam. grammar, marks off the difference between *′n* and ṉ in unequivocal terms:—

aṇṇa′naṇṇiya paṉmudaṉmaruṅgiṉā′nuṉipara′ndu meyyuṟavoṯṯa-t-tām iṉidu piṟakkum ta-gāra ′na-gāram. (Tolkāppiyam, Eḻuttadigāram, 93).

"When the terminal portion of the tongue, after being spread out, comes in full contact with the upper portion of the (upper) teeth adjoining the *aṇṇam*[2], the sounds *t* and *′n* are produced."

aṇari ′nuṉi′nā-v-aṇṇamoṯṯa ṟaḥkāṉahkāṉāy iraṇḍum piṟakkum. (Tol. El., 94)

"When the terminal portion of the tongue is raised and made to touch the *aṇṇam*, then ṭ (ṟ) and ṉ are produced."

The expression *′nā′nuṉi para′ndu* in the description of *′n* makes the chief difference between the two sounds sufficiently clear.

2. Colloquial forms in Middle Tam. inscriptions show indiscriminate interchange of *′n* and ṉ :—

(i) *′n* instead of the correct ṉ in instances like the following:- *vaṇiga′n* and *kēraḻa′n* [*SII*, I, p. 90], *ippo′n* and *eḻudi′nēṉ* [*ib.*, I, p. 116], *e′n makkaḷ* [*ib.*, I, p. 113], etc.

(ii) ṉ instead of the correct ’*n* :–ṉā*luḷakkıu [ib.,* I, p. 113], *iṉda [ib.,* I, p. 92], *i'nṉāyaṉār [ib.,* I, p. 92]; etc.

So numerous are the instances of such a "confused" mixing-up of 'n and ṉ in the Middle Tam. colloquial forms that one can safely infer that in the colloquials the difference between the two sounds had become obliterated. In literary writings, however, the traditional differentiation of *symbols* has always been kept up.

2. On the other hand, in Malayāḷam, though the Ārya eḻuttu used only one *symbol* for denoting 'n and ṉ, the difference in the sound-values was never lost sight of.

3. The old commentary in the fourteenth-century grammar Līlātilakam gives accurate descriptions of the two sounds and emphasises *what in modern linguistic terminology* may be called the *phonemic* difference between them:-

Bhāṣāyāmimāvarthabhēdakau, yathā "kāṇga 'nāvil" "kāṇ kaṉāvil"[3] ityādi...tasmād bhāṣāyām anayōrarthabhēdassiddhaḥ.

Sthānabhēdopyasti-'nakārasya dantaḥ sthānam--karaṇaṃ tu jihvāyā vistāraḥ- ṉakārasya mūrdhā-tatra jihvāgrasyōnnatiḥ-saṃskṛtē ētaṃ bhēdamaprayōjakīkṛtya dantasahitanāsikābhavatvamēvōktam.

athaḥsthitamētadarthabhēdāvasāyālla-ḷayōriva 'na-ṉayōrbhāṣāyāṃ bhēdōstīti.

V

The evaluation of Sanskrit *n* in Tamil

To-day, Sanskrit *n* is everywhere given the value of the "point-contact" alveolar ṉ of Tamil in the Tamil country, when Sanskrit texts are read or when Sanskrit words are used:– ṉamaskāra, ṉāma, ṉiyama, svapṉa, yatṉa, vighṉa, aṉya, uṉmēṣa, aṉvaya, prāpṉōti, etc.

Old Tam. adaptations of Sanskrit words generally show (in the Mss. now available) the symbol for 'n when the sound occurs initially or in the group 'nd, and the symbol for ṉ when the Sanskrit sound occurs in other positions. In other words, the Dravidian principle of the occurrence of 'n and ṉ has been followed in the adaptation of Sanskrit *n*.

The *n* of Sanskrit words used in Middle Tam inscriptions[4] is represented more or less in the same way as in Old Tamil when Tamil characters or vaṭṭeḻuttu symbols are used.

When, however, the granthākṣara script is used (for reproducing Sanskrit forms and passages containing sounds for which there are no symbols in Tamil script and in vaṭṭeḻuttu), the only symbol for *n* which the granthākṣara script has and which in shape is the same as that used for Tam. ′n is employed in all positions to represent Sanskrit *n*.

VI

The evaluation of Skt. *n* in Kērala.

Though a few divergences exist here, the general principles guiding the differentiation of the two values are (as shown below) fundamentally those regulating the occurrence of ′n and ṉ in Old Tamil.

1. The value of a "spread-contact" ′n is given to Skt. *n* in the following contexts:–

(i) in the initial positions, as in ′nārāyaṇa, ′niyama, ′nīti, ′namaskāra, etc.;

(ii) in the groups ′nt, ′nth, ′nd, ′ndh. as in a′nta, gra′ntha, ′ni′nda, a′ndha, etc.;

(iii) in all consonant groups in which *n* forms the second member (of the group): gh′n, g′n, t′n, p′n, m′n, ś′n, s′n. as in vigh′na, ′nag′na, yat′na, svap′na, ′nīm′na; praś′na, s′nēha etc.;

(iv) in instances involving "composition" or "compounding," in which the second constituents are felt as "separate entities":

(*a*) all compounds of *words* and *forms* in which the second member has initial *n*, as in śrī′nivāsa;

(*b*) compounds in which the final -d of the first constituent meets the *n*- of the second constituent, as in ta′n′nayana (tad + ′nayana) where the value ′n′n is given for the sandhi-produced group;

(*c*) in prefixal "composition" those instances in which the second members (containing initial *n*) are felt as separate entities) as in upa′nayaṉa, aṉu′nāsika, ā′nayaṉa, dur′nimitta, etc.;

(*d*) non-compounds in which *a* is followed by words with inital *n*-, as in a′nīti, a′nitya, but not when *an*- is followed by the initial vowel of the following word, as in aṉāvaśya, aṉādi, aṉādi, aṉavadhi, etc.

2, The value of a "point-contact" alveolar ṉ is given to Skt. *n* in the following contexts:—

(i) in internal medial positions whether the sound is short or long, as in dāṉa, aṉēka, jaṉaṉa, maṉuṣya, aṉṉa, chiṉṉa; bhiṉṉa etc.;

(ii) in final positions, as in rājaṉ, balavāṉ, etc.;

(iii) in groups *ny*, *nv*, *nm* in which *n* is the first member, ṉyāya, aṉyāya, aṉya, aṉvēṣaṇa, uṉmāda, etc,;

(iv) in those instances (involving prefixal "composition") in which the second members (containing initial *n*-) are not "felt" as separate entities, as in vin̠āśa, san̠n̠āha, un̠n̠ati, vin̠āyaka, san̠n̠addha, san̠n̠ipāta, ān̠ā'nda;

Līlātilakam adverts to some of these peculiarities of the Kēraḷa evaluations of Skt. *n* through a Skt. couplet cited in the commentary on Sūtra 7 of the second Silpa of the work:–

nakārasya n̠akāratvaṃ nakārēṇa yutasya ca halānyēna yutaṃ tadvat padādau ca sthitam vinā.

Though this couplet does not envisage all the pecularities pointed out above, it does indicate some of them. The commentary adds the following significant observations also in this connection:

asya nyāyasya cōḷēṣu vyabhicāradarśanāt,— a statement that goes to show that these Kēraḷa peculiarities were absent at that time in the Tamil evaluation of Skt.

One may roughly state that wherever the Skt. *n* is initial or is felt by the speech-consciousness as having the value of an initial in a separate entity, the "spread-contact" 'n is used; and in other contexts (except in 'nt, 'nth, 'ndh and 'nd, of course) the value of a "point-contact" alveolar is given. Analogy and phonetic factors may also have played a prominent part in this process of differentiation.

The rules therefore ultimately resolve themselves into the fundamental principles guiding the evaluation of Skt. *n* in Old Tamil, the variations being local (perhaps owing to the influence of the Nambūdiris, the earliest Aryan settlers in Kēraḷa and the earliest custodians Āryan learning in this part of India).

Līlātilakam adverts to the fact that the peculiarities in the evaluation of Skt. *n* are in no way inherent in Skt. uccāraṇabhēdastu kākatāḷīyaḥ–ēvaṃvidhavyavahāramūlamēva.

VII

Sanskrit *n*

The phonemic difference[5] pointed out for Mal. and Old Tam. does not exist in Skt, or in any other stage of Indo-Āryan.

The precise character of the production of OIA *n* may have varied with different periods and different speech-areas.

The Skt. grammatical treatises deal generally with the *ta-varga* as a homorganic group and (so far as I know) not treated about the sound value of *n* separately. So far as the point of articulation on the mouth-roof is concerned, while Pāṇini describes the group as "dantya" some of the Prātiśākhyas (Rg. Vēda Prātiś and Taittirīaya Prātiś). regard the group as dantamūlīya". As for the portion of the tongue involved, the Taittiriya Prātis and the Sukla Yajuh Prātiś refer to the "jihvāgra." The Atharvavēda Prātiś. uses the expression "jihvāgram prastīrṇam".

It is difficult to make out from these descriptions whether and how far the varieties of phonation were of the "spread-contact" dental type or of the "point-contact" alveolar type.

The word "dantamūliya" is interpreted by Dr. S. K. CHATTERJI as meaning "alveolar", and he makes the following observations regarding the sound-values of the OIA ta-varga at p. 243 of his "Origin and Development of the Bengali Language":-- "*t, th, d, dh*, according to the evidence of the Prātiśākhyas, were 'dantamūliya' or alveolar sounds (like *t* or *d* of English) and not interdental (like the Italian sounds) which they are now. *n, l* have always retained their alveolar sounds."

Prof. WACKERNAGEL, on the other hand, objects to the interpretation of the word "dantamūliya" as "alveolar" (Altindische Grammatik, I: p. 177, 152):--...die ai. Dentale, die nach R. Pr., 1, 19 (45), T. Pr. 2, 38, an der Zahnwurzel (dantamūla-) gesprochen wurden, also postdentale Laute waren, heute aber interdental gesprochen werden . Der Ausdrück dantamūliya darf nicht auf alveolare Aussprache gedeutet werden, da Ṛ Pr., 1, 20 vartsya 'alveolar' im Gegensatz von dantamūliya braucht." It is difficult, however, to find out whether and to what extent *vartsa* differed from dantamūlia and similarly *vartsa* itself from ***barsva***.

I may also observe here that *no* inference[6] can be drawn regarding the actual sound-value of Skt. *n* (i.e. whether it was of the "spread-contact" dental type or of the "point-contact" alveolar type) from the adoption in the south Indian granthākṣara script of a symbol for Skt. *n* which corresponds (in shape) to the Tamil symbol for the "spread-contact" 'n, or from the statement of the grammar Naṉṉūl (sūtra 150)[7] that ṉ (along with some other sounds) is peculiar to Tamil, while what is represented by the symbol for 'n is common to Tamil and Sanskrit.

I do not think that the precise sound-value of *n* need have been envisaged here. Since the symbol for Tamil 'n is associated with *t*, and since the Skt. has also a sound *n* in *ta-varga*, the one has been likened to the other purely from the point of view of association; and since the "point-contact" alveolar ṉ of Tamil is associated with the unique alveolar stop of Tamil, this ṉ has been differentiated as "unique" in Tamil.

VIII

n in NIA

Hindi, Bengali, Gujeràti, Sindhi and Panjabi evaluate *n* as a point-contact pre-alveolar or alveolar. I have heard native speakers use only this value for *n* (except of course in the groups *nt*, *nth*, *nd*, and *ndh*,). Marāṭhi, however, gives a "spread-contact" dental value for *n*, which value is particularly conspicuous in stressed positions and in the phonation of long or doubled *nn*, though in medial unstressed positions and finally the value tends to be some-what that of a "light contact" type.

FOOTNOTES

1. The symbols used in this paper for the transliteration of unique Tam. – Mal. sounds are the following:–

'n	the "spread-contact" dental nasal.
ṉ	the "point-contact" alveolar nasal.
ṭ, ḍ	the "point-contact" alveolar plosives.
ṟ	the palato-cerebral trill.
ḻ	the voiced retroflex continuant.
ɯ	the lip-normal back, closed vowel.

n is transliterated in this essay without any diacritic mark whatsoever, in illustrations or forms taken from languages in which there is *no* phonemic difference between *'n* and ṉ.

2. The word aṇṇam in Tamil grammars covers the entire region on the mouth-roof extending from the tooth-flesh to the soft palate.

3. Modern phoneticians may not completely approve of these two illustrations as bringing out the phonemic difference in view of the fact that in actual utterance there are other differences also:–

K'āṇga 'n'āvil 'see in the tongue';
Kāṇ ká'ṉāvil 'see in the dream';

The first difference is that while in the former there is a subsidiary accent on the ā of 'nāvil, in the latter the subsidiary accent falls also on the *a* of kaṉāvil; further, while in the former the-*g*-of kāṇga is completely voiced, the *k* of kaṉāvil in the latter is only partially voiced.

4. The "confusion" between the symbols for ṉ and 'n, consequent upon the use of the "point-contact" alveolar value for *all n* – sounds (in the colloquials of Middle Tamil), also affects the spelling of the adaptations of Skt. words met with in these inscriptions.

5. Such a phonemic difference has also not been recorded for any Indo-European speech, though different varieties (classified according to the regions on the mouth-roof, and the portion of the tongue-blade involved in the contact) exist in different European languages today. JESPERSEN *(Lehrbuch der Phonetik*, p. 34) has noted the following varieties: what he calls 'post-dentals', produced on the back surface of the upper teeth, occurring in most Romance languages and Slav speeches; varieties, occurring in French, in which one variety is similar to that described above and the other is produced on the region covered by the teeth and the teeth-flesh; a slightly retracted sound occurring in North German and in Dutch, in which the region of articulation is exclusively the teeth-flesh; the English (and South German) alveolars; and the "cacuminals" appearing after *r* in Swedish words.

As for the precise nature of the original Indo-European sound, while JESPERSEN suggests that "Man greift wohl nicht feil in der Annahme dass diese Aussprache (i. e. the very first variety mentioned above) in unserm ganzen Sprachstamm die ursprüngliche gewesen ist", BRUGMANN *(Kurze Vergleichende Grammatik der* IG.*-Sprachen,* p. 34) finds it difficult to make any suggestion in this direction, as could be inferred from his statement: "In den älteren Sprachen ist die genauere Bestimmung der dentalen Laute nach diesen drei Unterabteilungen (i. e., interdentals, post-dentals and alveolars) meist sehr schwierig."

6. Nor do I attach any value to the view that the Nambūdiris' evaluation of Skt. *n* in the west coast represents one genuine type of OIA pronounciation.

7. The N'aṉṉūl sūtra runs thus:–*ṟa-ṉa-la-e-ovvum uyirmeyyum uyiraḷaballā-c-cārbum tamiḻ, piṟa poduvē.*

It has to be noted that long before the time of 'Naṉṉūl, the difference in the sound-values of *'n* and ṉ had become obliterated. What is contemplated here is only the symbolic differentiation between what is called *ta'n'nagaram* 'the *'n* that goes along with *t*, and ṟ (ṭ) *a* ṯ *ṉa-garam* 'the ṉ that is associated with ṯ (ḏ), evaluated as ṟ to-day when short and intervocal.

Courtesy, New Indian Antiquary, Vol. I No. 12 March 1939; pp. 716-723.

REMARKS ON THE TREATMENT OF PDr *ō IN KũṛUX AND MALTO

Francis Ekka

O. In the table of correspondences given in the preface to the Dravidian Etymological Dictionary and in Dravidian Languages (Andronov, 1970) PDṛ. *ō is stated to be ō in Kũṛux and Malto.* Emeneau[1] also writes that PDr *ō represents a correspondence in which all the languages except Toda have ō. Careful examination of the correspondences for PDr *ō in Kũṛux and Malto suggests, that it has no correspondence in Kũṛux, and that Malto has only one etymon whose ō can be traced back to PDr. *ō.

1, This paper is intended to show from sources available in A Dravidian Etymological Dictionary and A Dravidian Etymological Dictionary: Supplement (henceforth DED and DEDS respectively) that majority of the Kũṛux-Malto entries with ō are shared innovations, and in the rest, excepting one Malto entry, Kũṛux-Malto ō is development of PDr. vowels other than *ō.

2.0. The following observation pertinent to the problem may be noted. A few Kũṛux cognates which are not entered in DED and DEDS have also been included from the author's own field-note. Those are preceded by E in parenthesis. Doubtful Kũṛux entries have been marked (?) which requires further verification. Malto o has been written as ō for uniformity.

2.1. There is no contrast between o and ō in Kũṛux in the word final position[2]. Malto has no word final ō: The word final ō in the following Kũṛux entries in DED may be due to over differentiation in recording.

DED	1	ajgō	'in that direction'
,,	308	ayō	'mother' ; iñgyō 'my mother'; taṅgyō 'his mother'
,,	351	ijgō	'in his direction'

DED	673	eeṛgō	'a small mouse'
,,	780	ayō	'excl. of pain'
,,	1383	khoḍrō	'hollow'
,,	1560	kogō	'mango stone'
,,	1667	kịsgō	'yam'
,,	2353	jorō	'leaking'
,,	1689	koṅkō, koṅkṛō	'curved'
,,	2725	tuppalkhō	'saliva'
,,	3140	nollō	'fishing net'
,,	3299	peṇdkō, peṇḍō	'yellowish'
,,	3449	pellō	'girl'
,,	3556	putbelō	'white ants queen'
,,	3705	porcō	'half crooked'
,,	3918	mōkhārō	'black'
,,	3994	bīnkō	'star'
,,	4153	meddō, (Hahn)	'brain'
		meḍḍō (?)	,,
		neddō (?)	,,
,,	4228	ehō, eōda	'how many'
		ehō, ekhō, ohō, okhō	'where precisely'
,,	4371	beṅkō	'bent'
,,	4562	(Hahn) bēlō	'queen of white ants'

One can possibly speculate that these words with ō in the final position are recorded from a dialect different from that of the author[3]. This seems to be quite unlikely. Even if it were so, the Kũṛux ō in this position is irrelevant to our problem since there is no corresponding word final ō in any other Dravidian language.

2. 2. Kũṛux o and ō contrast in the non-final position. However in the author's speech the following Kũṛux cognates have o in the place of ō. All of them have been rewritten in parentheses replacing ō by o.

DED	516	Kũṛ. ōlta nanna (olta nannā)	'to hide'
		ola (ola)	'hiding place'
,,	750	Kũṛ. ayōge (ayoge)	'excl of pain'
,,	1734	Kũṛ. khōṛkhā (khorkhā)	'deep'
		Malt. qoṇḍe	'deep'
,,	1816	Kũṛ. khōcol (khocol)	'bone'
		Malt. qoculu	'bone'
,,	1851	Kũṛ. kōnā (kornā)	'to enter, go in'
,,	3918	Kũṛ. mōkhārō (mokhāro)	'black'
,,	4215	Kũṛ. mōjkhā (mojkhā), mōsga (mosga)	'smoke'

mōjk̲h̲ornā (mojk̲h̲ornā) 'emit flames';
Malt.moge 'to smoke'; Br. mōlh 'smoke'

Here again, the Kũṛux entries with medial ō might be suspected to have been recorded from a dialect, different from that of the author. Even if it were so, such ō becomes irrelevant to our problem since there is no corresponding cognate with ō in any of the SDr. or CDr. languages.

2.3 The ō of the following Kũṛux, Malto and Brahui entries cannot be traced back to *ō, since there is no cognate in any of the SDr. or CDr. languages.

DEDS 126 Kũṛ. ōṛa 'bird'; (Hahn) ōṛe 'a small bird'; Malt ōṛe 'quail'
,, 333 Kũṛ. kōmaṛk̲h̲ā mann 'a tree'; (Hahn) kōm aṛk̲h̲a 'a vegetable'; Malt. kōmo 'a delicate vegetable obtained from the Kachnar tree'
,, 585 Kũṛ. nōl 'pumpkin'; Malt lōlu 'gourd'
DED 868 Kũṛ. ōgnā 'to swim'; ōgrnā 'to be swam across'. ōgta 'āna 'to make swim'; Malt. ōge 'to swim, float'
,, 872 Kũṛ. ōsā 'mushroom'; Malt. ōsu 'mushroom'
,, 899 Kũṛ. ōr, ōṛ 'beginning, origin'; Malt. ōṛe. 'beginning end'; ōṛotre 'to end, finish'
,, 1812 Kũṛ, k̲h̲okh̲a 'behind, afterwards'; Malt, qōg 'behind', qōge 'the back'
,, 1817 Kũṛ. k̲h̲ōs 'to pulverize by pounding vertically with a heavy instrument'; Malt. qōse 'to pound, smash'; Br. k̲h̲ōshking (loc. var) k̲h̲ōshing 'to rub' tēne k̲h̲oshking 'to consort with, interfere with'[4]
,, 1843 Kũṛ. k̲h̲ōyna (k̲h̲ojjas) 'to measure'; k̲h̲ōytārnā 'to be measured'; Malt. qoye 'to weigh, measure'; qoytre 'to have anything measured'.
,, 1859 Kũṛ. kūl 'belly; stomach, womb'; Malt. kōli 'abdomen'; Br. k̲h̲ōl 'womb; offspring, entrails'; k̲h̲ōlak̲h̲u, k̲h̲ōlk̲h̲u 'entrails, woof and warp'
,, 3738 Kũṛ; pōk 'ant (not white ant)'; Malt. pōku 'ant'
,, 4214 Kũṛ. mōcnā 'to cut'; Malt. mōce 'to cut (as meat)'
,, 4221 Kũṛ. mōdhrna 'to forget'; Malt. mōdhre id.

2.4. Kũṛux and Malto ō in the following set of entries cannot be traced back to PDr. *ō since other languages of both the SDr. and CDr. groups, have different correspondences.

DED 283 Ta. ā, āṉ 'female of ox'; Ma. ā, ān 'cow';
Ko. a. x 'cow'; ka.ā, āva 'cow; Te. āvu 'cow'
Kũṛ. ōy 'cow'; Malt. ōyu 'cow, ox'

DED 516 Ta. uṇ ‘to eat’; Ma. uṇṇuka ‘to eat’ Ko. uṇ ‘to drink’; To uṇ ‘to drink’ Ka. uṇ ‘to eat’; Kod. uṇṇ ‘to eat a meal’ Tu. uṇpini ‘to eat rice’; Te. (K) ūṭu ‘(cattle) to drink water’; Kol. un ‘to drink’; NK un ‘to drink’; Pa. un ‘to drink’ Ga (011.) un (uṇḍ) ‘to drink’, (S) un ‘to eat’ Go. unḍāna ‘to drink’. Kui uṇba ‘to drink’. Kuwi (F) ūṇdali ‘to drink’. Kũṛ. onna (oṇḍas) ‘to drink’ Malt. ōne (onḍ) ‘to drink’, eat food’. Br. ? Kunning ‘to eat, drink’

DED 565 Ta. uru ‘to burn’, Ko. ury (urc) ‘heat, sweat’ To. uf (ut) ‘burns’ also DEDS 121. Te oliki ‘a funeral–pile’. Pa elṅgam ‘blaze of fire’; olip (olit) ‘to char, scorch’, Kũṛ. ōlna ‘to be in fire’ also DED 898 Kũṛ. ōrna ‘to be heated’, ōrta’āna ‘to warm, heat’ Malt. ōrtre ‘to make red hot’, ōthre ‘to become red hot’.

DED 636 Te (K) ūḍ (u) cu ‘to strip off’. Kol (SR) uḍp ‘to undress’ ? Go urumāna ‘to be scrapped’ Kui ūg ‘to be stripped off’ Kũṛ. oṛok ‘bark of the tree’, Malt. oṛku ‘bark’ ōṛze ‘to peel’.

DED 834 (b) Ta. oṉṟu ‘the number one’ Ma. onnu ‘one’ Ko. od̠ ‘one’. To wid̠ ‘one’. Ka. ondu ‘one thing’. Kod. ondi ‘one thing’. Tu. onji ‘one thing’. Te. ondu‘one thing’. Go. unḍi ‘one’. Konda. unri ‘one woman or thing’ Kũṛ. ōn, ōnd ‘one whole’, ōndkita ‘at one time’. Malt. one ‘one (thing)’.

DED 851 Ta. or̤ukku (or̤ukki) ‘to draw out’. Ko. oṛk (oṛky–) ‘to embroider’. To, wïrk (wïrky–) id. Tu. nūl–oḍu ‘to spindle’. Te. oḍuku, vaḍuku ‘to spin (tr)’. Kui osa (osi) ‘to sew, weave’. Kũṛ. ōjna ‘to spin’ twist. Malt. ōje ‘to twist’; ōjgre ‘to be twisted’.

DED 1579 Ta. kūr ‘to be abundant’ Te (K) Kuru ‘to be abundant’ Kũṛ k͟hōrna (k͟hūryā) ‘to thrive, be prosperous’ Malt. qōre ‘to be enough, be much’, qortre ‘to supply or provide for abundantly’.

DED 1689 Ta. kokki ‘hook’. Ma. kokka ‘hook’. Ko. kok– (koky–) ‘to become very bent with age’. To. kwiky ‘hook’. Ka. kooki, kokke ‘hook’. Kod. kodde ‘look. Tu. kokke ‘a hook’– Te. kokki a hook’. Kol. gog– (gokt) ‘to bent over’. NK. koṅki ‘curved hoe’

Pa. kokta 'crooked'. Kui koṅgoni 'crooked'. Kũr̤ khōṅghnā (?) 'to bend (tr)' ref. pass. khōṅghrana (?) (E) kholkhrna 'to bend one's body', koṅko, konkṛo 'shaped like a hook', (E) kokṛo 'curved' Malt. qonqe, 'to indent', kokre 'to stoop down', kokro 'bent'.

DED 4134 Ta. mūṭai 'sack ! Ma. mūṭa 'lead'. Ko. mut 'bag of grain' To. mu'ṭy 'full bag'. Ka. muṭe 'bundle of grain', Tu. moṭṭe 'bundle'. Te. mūṭa 'bundle' Pa. mūṭa 'leaf-basket' Kuwi (F) mūnta 'bundle' Kũṛ mōṛa 'grain bale', (E) moṭa, muṭri 'bundle'

DED 2865 Ta. totụ 'to touch'. Ma. toṭuka 'to touch'. Ko. toṛv- (toṛd) 'to put arms around'. To. twad 'to be polluted', Ka. tuḷu/toḍu 'to join'. Ko. tod 'to touch'. Ko. tod 'to touch'. Tu. toṭṭuni ·to embrace'. Te. toṭṭu 'to touch'. Pa. ṭoḍ 'to touch'. Ga (011.) toru id; (S) torru 'rope'? Go tōṛhānā 'to sleep with'. Kūṛ toṛsgna, (E) toṛsnā 'to touch with the foot'. Malt. tōre 'to string the bow' Er, tōning 'to hold'

2.5. Kũṛux-Malto ō has correspondence for ō in Go, and Kui in DED 1787; in Ma. in DED 4212 and in Kui in DED 3136 below,

DED 1787 Ta. kor̤untu 'tender twig' Ma. kor̤unnu kor̤untu id. To, kwiz 'twig' Koḍa 'tenderness' Tu. kore 'weak' Te. krotta 'new', Kol. ḳovve 'young of bird or animal'. NK. kovve id. Pa. koṛ 'very young' Ga (oll) koral 'son's wife' Ga (S) koḍus (koḍe) 'to sprout' Go. koḍḍ, 'tender tip', kōrsāna, kōrsāna 'to sprout' Konda kor̤o 'son' Kui kor̤u 'new shoot' Kũr̤. khōr 'leaf bud', khōrnā (khūryā) to shoot out new leaves' Malt qōro 'infant' qōroce 'to sprout'.

DED 4212 Ma. mōkuka, mōntuka 'to drink'. sip, mōyika 'to give to sip'; mōval 'a gulp' Kũr̤. mōkhna 'to eat (anything except cooked rice)' pass or refl. mōkhrna, mōkhta'ānā 'cause some one to eat' Malt. mōqe 'to eat'*?* Ma, māntu mānti) 'to eat' 'drink' also DED 4011 Ta. mukku 'to eat' mokku (mokki), mokkittin 'to eat greedily in large mouthfuls' Ka. mukku 'to eat in a certain manner'. Tu. mukkuni ‘to swallow’ Te bokku ‘to eat greedily’. Kui muka (muki) ‘to cast food into the mouth’.

DED 3136 Ta. nuṭakku ‘to wash’ Tu nuḍiyuni, nidipini Kol. oḍ ‘to wash’ o.ḍp ‘to bathe (tr)’ NK oṟ ‘to wash’ Pa, noḍ ‘to wash’ Ga (011) nor ‘to wash’ (S) norr ‘to wash’. Go. norāna ‘to wash’ Kuwi (S) nor̄h’nai ‘to wash’ Kur. nōṟna id; nōṟhrna ‘to wash one self’. Malt. nore ‘to wash’ anything’; nodre ‘to wash one’s hands and feet’.

2.6. Kũṛux ō has correspondence for ō in Ko. in DED 1560, in Ta. and Ma. in DED 1788; in Parji in DED 4055; in Go. in DEDS 339 and in Ko. Ka. Tu. Kui and Kuwi in DED 2917 below:

DED 1560 Ta. kūcci ‘pulp of wood apple’. Ma. kunnu, kunni, kunnal ‘centre of a fruit’. ? Ko. ko ‘g’ stone of olive. ? To kwig ‘seed inside fruit’. Tu. kunji, gunji ‘the stalk in the midst of a jack fruit’ Kūr. kōgo (entered as kogō) ‘mango stone’ Go (Ma) go’i ‘stone of mango’, (Mu) gohi ‘pulp of fruit’.

DED 1788 Ta. kol ‘to buy’, kōṭal ‘buying’. Ma. Kō (imperative) kolka ‘to hold’. To kwil ‘to carry’ Kũṛ. khōndna ‘to bring together’ also DED 1562 Ta. kūṭu ‘to come together’ Ma. kūṭuka ‘to come together’. Ko. Kuṛ. ‘to join’. To. Kuṛ. ‘to join’. Ka. kuḍu ‘to join’. Kod. kud ‘to pin with others’ Tu kudni ‘to join’. Te. kuḍu ‘to meet’. Kol. (Kin) Kuṛ pav ‘meeting of ways’. Pa. Kuṛer ‘to assemble’ Kuwi (S) kuḍi kinai ‘to assemble’ Kũṛ khōnḍna ‘together’.

DED 4055 Ta. mutalai. Ma. mutala. Ko. mocal Ka. mosale, masale. Kod. mosale. Tu. mosale Te. modali Kol (Kin) moseli. Pa. mōca, Koṇda (BB) mōdi, mudi. Kũṛ (BB) bōca Malt. boce ‘crocodile’.

DEDS 399 Go (Tr) Kōr ‘a sheaf in the field’. (Voc 983). Kũṛ khōl (?) ‘rice sheaf’.

DED 2917 Ta. tukai ‘to trample on’ ? Ko. to. t ‘to beat slightly’ Ka. tōku ‘to beat’. Tu. torpuni id; tōku ‘collission’ Kui tōga ‘to kick’. Kuwi (F) toiyali ‘to kick’. Kũṛ tōknā ‘to stamp violently with one foot or with both feet’.

Kũṛux tōknā has been wrongly entered in DED 2917 above. It does not mean ‘to stamp violently with one foot or both feet’ as recorded in DED. tōknā actually refers to lifting of the foot or feet relatively high while performing dances. In Kũṛux dance patterns, the foot is normally raised between six inches to one foot high above the ground. This is referred to as *nalna* 'to dance'. The kind of dance where foot is raised higher than this normal height is referred to as *tōkna* 'to dance'. For instance Kũṛux sentence *e:n naldan* means 'I dance foot raised of the normal height', whereas *e:n tōkdan* means 'I dance (foot/feet raised higher than the normal height) The latter does not mean "I stamp violently with one foot or both feet". Since *tōkna* refers to the lifting of foot, it is suggested that it should be conveniently entered in

DED 2777 Ta, tūkku 'to lift up' n. height, dancing'
(a) Ma. tūkkuku. 'to expend'
Ko. tu. g 'to hang'
To. tu'x 'to hang'
Ka, tūgu 'to lift up and swing'
tuku 'moving up and down-or backwards and forwards'—
Koḍ tu'k 'to hang'
Tu. tūkuni 'to hang' etc.

2.7. Malto ō has correspondence for ō in Kuwi (S) in DED 2879; in Ga. (S), Ga (S^2); Go. (Bilaspur) and Ta. in DED 3709 and in Ta. Ko. Ka. Te. and Pa. in DED 3760 below.

DED 2879 Ta. toṇṭai 'throat'. Ma. toṇṭa 'wind pipe,/ throat'. Ko. toḍ 'throat'. Kod toṇḍe id. Tu. donḍe 'throat'. Malt. tōn̲r̤e 'throat' in DEDS 494 Go (Ma) ṭoḍra 'neck' Pe. ṭoṭra id. Kuwi (Kar) ṭoṭro, (S) ṭōṭro 'throat'.

DED 3709 Ta. poru 'to join; unite' Ga (S) pōrc to be found; Go (Bilaspur) pōri near. Ta pōr 'joining fast together' Te. pontanamu 'a happy conjugation of the stars'. Ga (S^2) pōrc 'to be found' Malt. pōri 'the joints of a bamboo, cane or the fingers'.)<IA) of. S630 of. Pkt. pora 'joint' Turner CDIAL no. 8406.

DED 3760 Ta. pōr 'be disunited'. Ko ho't 'hollow in the trunk' Ka pōr 'to cleave'. Tu poṭṭe 'hollow of a stalk or tree'. Te. prōju, pōcu 'to split into filaments' Pa. pōr 'to split' Malt. pōye 'to open tear, gape'

3. The above mentioned observations make it clear that Kũṛux and/or Malto ō in 2.5, 2.6 and 2.7 alone are significant to our problem.

3.1. In DED 1787 (2.5) we have Go. Kōṛsāna, kōrsāna 'to sprout'; Kui kōru 'new shoot'; Kūṛ. khōr 'leaf bud'; khōrna 'to shoot out'; and Malt. qōro 'infant, qōroce 'to sprout'. Since Go and Kui belong to the CDr. group and Kūṛ and Malt. to the NDr. group, the ō in these languages would probably be reconstituted as PCNDr. *ō. Another alternative which seems to be more plausible is to treat Go, Kūṛ and Malt. ō as the development of PDr *o. This latter treatment is supported by the fact that we have instances where PDr *o < *ṛ > ō in Go. Kūṛ and Malt. (of DED 151, 1782, 1784 etc.)

Treatment of Kūṛux–Malto ō of DED 4212 (2.5) is complicated due to, on the one hand, its uncertain correspondence for Ma. ō and on the other, due to the possibility of treating this entry in DED 4011. Among Ma. entries mōkuka, mōntuka 'to drink, sip' mōyika 'to give to sip' and moval 'a gulp' the latter three cannot be said to be the correspondences for Kūṛ., mōkhnā and Malt. mōqe 'to eat', since otherwise we cannot account for the development of Kūṛ. -kh- and Malt. -q-, both of which are the representation of PDr. *K. Thus Ma. mōkuka alone can be the correspondence for Kūṛ. mōkhnā and Malt. mōqe 'to eat'. It may however be noted that its very existence in Ma. has to be verified since the author's Malayalee friends have not accepted it as a Ma. word. If, on the other hand, we treat the Kūṛ–Malt entry in question under DED 4011, then Kūṛ–Malt. ō cannot be a development of PDr. *ō, since no other language has ō. Kūṛ–Malt. ō in DED 3136 (2.5) which has correspondence for Kol. and Kuwi (S) ō also cannot be the development of PDr. *ō since Ta. and Tu. have u and other language have o,

3.2. Ko. cognate in DED 1560 (2.6) is a doubtful entry. Hence it is irrelevant to our problem.

Treatment of ō in Kūṛux khonḍna 'to gather' is complicated because it has been entered both in DED 1788 and DED 1562 (2.6). In 1788 Kūṛ ō corresponds with Ta. Ma. o and ō. o is the root vowel both in Ta. and Ma., whereas ō in Ta. is in the verbal noun and ō in Ma. is in the imperative form. Thus the lengthening of the root vowel o in both the languages is the result of morphophonemic process. Further evidence for lengthening of the root vowel is as follows :

DED 799 Ta. oṭi 'to break', oṭṭa 'crack, leak' Ma. oṭiyuka 'to break', ōṭṭa; 'crack, hole'; Ka. oḍi 'to be broken' ōṭe 'crack, puncture'.

DED 837 Ta oli 'to sound', ōl, ōlam 'sound'; Ma. olikka 'to sound'. ōlam 'cry for help'.

DED 1789	Ta koḷ ‘to strike, hurt’ koḷ, (koraḷ) ‘killing’, Ma. koḷka ‘to hit’ koḷ ‘hitting’
DED 3255	Ta. para ‘to spread’, pār ‘expanse, earth’, pāram, pāri ‘earth’.
DEE 3708	Ta. poru ‘to fight’, pōr ‘battle’; Ma. poruka ‘to fight’, pōr ‘battle’

This phenomenon suggests that ō in Ta. kōṭal “buying” and Ma. kō ‘hold imperative’ which is the result of the morphophonemic process, cannot be said to be the correspondence for Kũṛ root vowel ō in khōṇḍa ‘to gather’. Again, if Kũṛ ō in question is treated under DED 1562, then it cannot be treated back to PDr *ō since all other languages have ū. The ō in Kũṛux, Parji and Koṇda (BB) in DED 4055 (2.6) and in Kũṛux and Gondi (Tr) in DEDS 339 (2.6) also cannot be the development of the PDr *ō, since none of the SDr. language have ō, though we can probably reconstruct it as PCNDr. vowel.

3.3 In DED 2879 (2.7) supplemented by DEDS 494 we have Kuwi (S) tōtro ‘throat’ and Malt. tōṇṛe ‘throat’. These two examples do not provide any clear evidence for reconstructing ō as a PDr. vowel, since the presence of o in other languages cannot be adequately explained. Moreover, Kuwi tōtro ‘throat’ is of Sunkarametta dialect while the Karaveli Kuwi dialect has ṭoṭro ‘throat’. This dialetical difference may be due to independent development, and in such cases it is difficult to determine which of these vowels is original.

In DED 3709 (2.7) supplemented by DEDS 630 we have Ta. ō corresponding to Malt. ō. Since the Malt. word is reported to be an Indo-Aryan borrowing it is not relevant to our problem.

Finally we have DED 3760 (2.7) in which Malt. ō corresponds with ō in other languages. This is the only entry where Malt. ō can be traced back to PDr. *ō

4. From this survey it becomes clear that PDr. *ō has no correspondence in Kũṛux and that Malto has only one entry in DED 3760 whose ō is the representation of PDr. *ō. In the rest of the entries Kũṛux-Malto ō is a development of PDr. vowels other than *ō. The predominance of the lack of correspondence for PDr. *ō in Malto suggests that we need to verify the quantity of the vowel ō in Malto pōye ‘to open’.

NOTES

1. *Dravidian Comparative Phonology: A Sketch* Annamalainagar, 1970, p. 27.
2. This observation is based on the author's analysis of the Kũṛux phonology. Kũṛux is his mother tongue.
3. The author speaks Kũṛux of Jashpur tahsil in Raigarh district of Madhya Pradesh. Dialect variations, if any, between Kũṛux speeches of different regions have yet to be investigated.
4. Prof. Emeneau in his *Brahui and Dravidian comparative Grammar* (p. 19) takes this entry (and also DED 4215) as the evidence to show that Br. ō is the development of PDr. *ō. The author thinks that one cannot take ō in DED 1817 beyond PNDr. since there is no cognate in any of the SDr. languages. On the basis of our observation in 2.2. Br. ō in DED 4215 also cannot be the development of PDr *ō.
5. DED 851 Ta or̤ukku (or̤ukki) 'to draw out'; Ko or̤k (or̤ky-) 'to embroider'; To. wïrk id. Tu. nūl oḍu. 'a spindle'; Te. oḍuku 'to spin (tr)'; Kui osa (osi) 'to sew'; Kũṛ. ōjna 'to spin'; Malt. oje 'to twist'

DED 1782 Ta. Kor̤i 'to sift in a winnowing pan'; Ma. Kor̤ikka 'to sift'. Ko. kod 'to seperate broken from whole grains by winnowing' To Kwic 'to separate grain from stones'; Ka. Koccu 'to shake flour'; Te. Kõḍu 'to separate the broken from unbroken'; Kol. gonjip 'to winnow with side to side motion'; Go. Kossāna 'to sift'; Kui. Kṛohpa 'to sift'; Kui. Kṛohpa 'to sift'; Kuwi (F) Korssali 'to winnow'; (S) Kloh'nai 'to sift'.

DED 1784 Ta. Kor̤u 'fat'; Ma. Kor̤u 'fat' ? Ko. Kol 'to be well in health'; To Kwalp 'fat'; Kow 'fat'; Ka. Korvu 'to grow fat'; Tu. Komme 'fatness'; Te. K (r) ovvu 'to become fat'; Kol (Kin) Koṛu 'fat'; NK koṛu id. Pa. Koṛ- (S) Koṛv 'to be fat' Go. (A) Koṛving, (W) Kurwinj; (L) Kōduvasaka, Kōsēla 'fat'. Kui Krōga 'fat' Kuwi (F) Korowa 'fat' ? Br. Kuben 'heavy'.

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PROBLEMS IN DEFINING "STANDARD" LANGUAGES IN INDIA, ENGLAND AND THE UNITED STATES

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This paper is a study of the socio-economic factors associated with the establishment of "standard", languages in several parts of India and the English speaking world. The areas included are: (1) the Hindi-speaking region, which is currently involved in a nation-wide conflict because of the national language question and the concern about the definition of standard Hindi: (2) the Marathi-speaking area, which shows a traditional picture of linguistic domination by Brahmin elites; (3) the Tamil-speaking region, which has recently over thrown the traditional Brahmin standard of highly Sanskritized Tamil (and this development apparently correlates with other changes in political and economic structure); (4) England; and (5) the contemporary United States. In these and other areas, "standard" (=correct, pure, proper, etc.) usage is based on the naive usage of certain groups. This paper will ask to what extent these groups can be identified in socio-economic terms, and will consider the implications of these identifications for social dynamics and sociolinguistic change in each of the areas studied. One question of particular interest in this connection will be the extent of linguistic sanctions against non-"standard" speakers, and the effectiveness of these sanctions against their social advancement.

In a well-known passage in the last chapter of his book *Language*, Leonard Bloomfield discusses the importance of the role of grammarians in the exploitations of the linguistic insecurities of the middle classes in 18th century England:

> The background of our popular ideas about language is the fanciful doctrine of the eighteeth-century "grammarians"... It is no accident that the "grammarians" arose when they

> did. During the eighteenth and nineteenth centuries our society went through great changes: many persons and families rose into relatively privileged positions and had to change from non-standard to standards speech. (496-7)

It may be safely presumed that in socially stratified societies there have always existed socially conditioned linguistic variants, just as there exist other differences - in dress, manners, etc. In such circumstances, an important role is played in linguistic change by the related processes of linguistic snobbery (imitating the usage of a higher class) and linguistic oneupmanship (avoiding and replacing the variant which has become contaminated by lower-class imitation.) With the introduction of formal education (often linked with some form of literacy), invariably confined to the elite group, a powerful tool becomes available for the manipulation of linguistic norms. Though manipulation, no doubt, takes place even in the absence of a formal educational system, having a body of experts entrusted with the codification and preservation of linguistic "purity" not only ensures more uniformity, but has probably been of great importance in maintaing class distinctions. I shall return to this point after discussing the situation in the areas under study.

India - Background

India has long been a very fertile source of data on all kinds of linguistic variations: regional, social and stylistic. Though some of these have been studied only recently, all are apparently quite old. Regional variation is mentioned in the earliest grammatical treatises, and is known form the Ashokan inscription of the 3rd century B. C. The existence of social variation, i. e. the use of different groups, is shown for example in the Sanskrit dramas in which lower characters use Prakrit; sylistic variation, i. e. the use of different varieties by the same individual in different social contexts, is known also from early grammatical works. The Sanskrit grammarians belong to a tradition created by Panini being the first to study grammar in a serious way; linguists have often spoken admiringly of Panini and the excellence of the tradition he inagurated, but have rarely paused to examine the social context in which he existed. According to Patanjali a grammarian of the 1st century B.C., the study of grammar has as its motive the presentation of the Vedas, the learning of proper language for use in performing Vedic sacrifices, the avoidance of barbaric speech, the preservation of one's proper status, and related purposes[1] Tradition. tells us that the Brahman grammarian taught Sanskrit to the sons (not to the daughters) of upper-caste families, in circumstances which prevented even the accidental attendance by lower-caste children (usually in the home of the Brahman *guru*, which members of lower castes could not approach). Penalties were prescribed for members of lower castes who heard or spoke the words of the Veda. In establishing themselves as an elite, the Aryans apparently made very good use of their greatest social asset: the Vedas, the elaborate ritual sacrifies, and the associated ritual language. Thus there appear to have been, in that early period of Indian history social motivations behind the establishment of a grammatical tradition which were of similar type to those mentioned by Bloomfield. The reasons which the society offered itself for the study of grammar were, typically, unrelated to the social role of this study; Patanjali mentions, for example, the notion that proper grammar leads to heaven, whereas improper grammar can lead to defeat, ineffectiveness of a sacrifice, and in some cases death. We return to the question of attitudes later.

The educational empire of the Brahman *gurus*, almost unchallenged in the early period, began to break up when Persian, and then English, replaced Sanskrit as the language of administration. The British educational system created an English-speaking elite to man the civil service. The traditional, Sanskrit-based elite faded into the background, except for those who took to the new English education. This education was of course available to all who had the means, so that there was some change in the shape of the elite group. Once this system, was established, however, it was easier to stay in than to get in (as with most such systems). In recent history those who have gone to English-medium schools from the beginning of their education and who have had access to books and other forms of reinforcement out side of the school, have managed to get. all the top positions ie. government, business, and the academic world A story was told to me of a lady instructor in a college in Delhi who had been to a vernacular school, though most of her students had attended English-medium schools. Though competent in her subject, the lady in question resigned from her post after one year, because, her clumsy English was the laughing-stock of the college, and she was unable to say a sentence in class without being corrected by her students.

India – The Current Situation

Most elementary and secondary education in India now is in the vernacular language, which have received a great deal of cultivations since the British period (and some of them earlier). In most of the vernaculars which are taught in the schools, the "standard" form is rather different from the various colloquial forms used by the majority of speakers.

The situation differs from one area to another: "standard" Tamil, for example, is like a second language for some school children, differing substantially from any spoken variety in phonology, morphology, and lexicon; "standard" Marathi is quite different in many respects from most colloquial varieties, but the gulf is not so wide. The higher, or "standard", forms are archarizing in their phonology and morphology, and borrow most of their learned vocabulary and many of their morphological processes from Sanskrit (or in the case of "standard" Urdu, from Arabic and Persian; see below for Tamil). The "standard" forms have in most cases been shaped by scholars who were more concerend with linguistic "purity" than with mass communication. In many cases, the "standard" form of the language avoids terms borrowed from other languages (primarily English) in the interests of "purity".

In the case of some of the modern vernaculars, the cleavage between the "standard" and the colloquial is of long standing - e g• in Tamil, Bengali, and Marathi. In Hindi, the current diglossia has been fairly consciously created within the last fifty years or so. The current "standard" Hindi (which is the official language of the Hindi-speaking states and the official national language of India), as used in government documents, textbooks, and newspapers, as broadcast over All India Radio, and as taught in the schools, is incomprehensible to the majority of inhabitants of the Hindi area. Though it would have been possible to base a standard language on the normal colloquial speech of educated speakers in this area, a conscious effort has been made to create a highly Sanskritized form of the language by replacing all commonly-used words of Persian or English origins with Sanskrit. From the point of view of education in this language, Das Gupta and Gumperz state that

> ... the new grammatical differences between colloquial and literarary Hindi resulting from recent language reform materially add to the ordinary speaker's task of learning literary Hindi. Many of the new rules are irregular...Considerable exposure time is required before such rules can be mastered... those who have been exposed to the present form of literary Hindi as part of their family background have considerable advantage in the educational system. (163)

In commenting on the Hindi situation, they point out that the Hindi purists have considerable political backing. This appears to derive in considerable measure from the very people who benefit least from the new Hindi, namely the uneducated Hindi speakers.

In discussing the question of Hindi with various Hindi speakers, I found that the "standard" form is accepted as such by a large number of speakers, including many who do not understand it. (Much the same way that "standard" American English is accepted by many speakers of non-standard varieties). Among those who are aware of the controversy invloved, the Sanskritized "standard" is supported by arguments of "purity" (Do you want everybody to talk like taxi-drivers) and by the need for expressing the "spirit of Hindi"-which presumbly means the elimination of any words brought into the language from outside sources during the past 2,000 years. This idea is most commonly expressed by people who themselves belong to the educated elite; indeed, the new system produces results similiar to the old, in that it is primarily the speakers who come from a literary educated family who can suceed linguistically. Often, the same people who control the literary Hindi now used in the school, have themselves excellent control over written and spoken English, and are educating their children in both.

The new Hindi, as developed by Pandits and Politicians is one of the important tools in the fight to replace English with Hindi. However, it is striking how the Hindi being stressed is not one which is easily accessible to the child of an ordinary man. Because of its manifestly close relationship to Sanskrit, its users would like to think of it as prestigious and "just as complicated" as English. It ignores completely the existence of fairly general urban colloquial forms used by educated and semi-educated speakers, which would be more accessible to the population as a whole.

In the case of Marathi, the Sanskritized "standard" form is quite close to the usage of urban Brahmans (and a few other high castes) and presents no special difficulties in learning for those brought up in a high caste household. As Apte (23-4) points out, the Brahman variety is the most distinct type of Marathi – i. e. all other varieties are more similar to each other than any of them is to the 'standard Brahman dialect'. Though Apte is referring mainly to phonological differences, there also appear to be substantial differences in vocabulary. In recent history, the Marathi area has been strongly dominated by Brahmans in political and academic life, though Brahmans constitute well under 10% of the population. It is clear here that the perpetuation and development of this elite variety helps to make it harder for others to enter these fields. This is particularly true of speakers from the lowest castes, who traditionally live in separate areas of villages, or even in separate hamlets.

The situation in Tamil, until comparatively recently, was similar to that in the Marathi area. The "Brahmin Standard" form of Tamil is highly Sanskritized, even though Tamil is a Dravidian language, and many Brahmans still speak a highly Sanskritized form of Tamil. More recently (mainly since the begining of the 20th century), as certain high non - Brahmin castes gained political and economic power, the Sanskitized form was replaced by what is called "pure" Tamil, whose vocabulary is extensively borrowed from the Classical Tamil, while politically acceptable to many Tamilians as an expression of rejection both of the Brahmins and of the Aryan North, leaves many speakers of Tamil (especially those from illiterate, low-caste backgrounds) in a bad situation as before. When a village untouchable child starts school, he is expected to learn all of his subjects through a medium different from his own (though some what closer to the written variety used in textbooks.) On the other hand, he lacks articulateness and the intellectual tradition of the Brahman child. Furthermore, he is not even regarded as educable until he shows the capacity to perform well in the literary form of the language. He is expected to fail this test by the time he reaches high school at least, and in most cases he does. One teacher in Madras City commenting on the situation stated : "it will take two or three generations for these people to come up. Once they leave the school and go home at night, they learn nothing. The others will always be ahead of them."

In all the areas mentioned here, there are strong forces at work to maintain (if not increase) linguistic defferences in each regional language. Though educational institutions now a days have been given the task of educating the masses, the current educational system has inherited the attitudes of the old. The tradidional system was designed to maintain the "purity" of the ritual language and so limit access to the elite group. The new system accomplished the same thing by defferent means. It is agreed in all areas that there is only one "standard" and this is defined by that group which has tratidionally been most articulate about such questions. The "standard" is either the property of the elite group, or is more accessible to that group by virtue of its intellectual traditions. In all cases, the student who enters school without the benefit of home exposure to the right language is told, in effect, that he must learn an extremely complex language before he can be taught anything.

England and the U. S.

Though the English grammarians never succeeded in oblliterating the differences between upper and middle class speech (i. e. between U and non-U)[2], they did succeed in making a clear distinction between the educated and the uneducated in their attitude toward correctness, and in their public use of English. In the new world, the puristic attitudes of the colonial pundits such as Noah Webster[5] led to what has been called the "dictaterships of the schoolroom", based on the immutable gospels of the dictionary and the spelling book. This institution severd to establish and perpetuate a single narrowly-defined variety of English as the only one acceptable for formal usage. The persistence of this doctrine in the United States can be related to the continuing insecurity of the middle class people about their use of English. It has been pointed out recently by Labov (1969 : 16 ff.) that this sort of insecurity is greatest among the lower-middle class, and most strikingly among the female members of that class (1969 : 29-30); since this is the group which has traditionally provided most of our public-school teachers, this behavior has obvious implications for education.

For the upper-middle class, those who have easy access to the "standard", the grammarian has the function of guarding the "purity" of the language, and keeping the grammatical ideal before the eyes of the public. That this is viewed as an important function is shown from time to time in PTA meetings where parents complain that the schools are not teaching proper grammar. It was shown quite dramatically by the public outcry that followed the publication of Webster's *Third New International Dictionary*, which lowered (ever so slightly) the threshold of acceptable English to include, such words as *finalize* and *uncoming*. It is significant that there is no *linguistic* definition of "standard" English other than a nagative one : ie. it is that variety of English which avoids certain well-known taboos, namely those associated with the "wrong" groups of people, such as those who say *ain't*. For those spearkers of English who do not have the benefits of home exposure to the "standard", the teaching of English grammar functions as a nuisance and an impediment to education.

Let us examine briefly the role of grammarians and linguists in the social processes I have been discussing ; Ever since Bloomfield, many American linguists have insisted on the equality of all varieties of a language for purpose of scientific enquiry. On the other hand, most linguists until recently have shown by their actions that the "standard" variety is more worthy of study than others. By accepting uncritically the categories of "standard", "non-standard", and "sub-standard", as though they were linguistically definable, they have added their voices to the legitimation of these nations.

If these labels are to have any meaning, they must either refer to the usage of some definable group, or relate to specific linguistic features. Many linguists have assumed that they know what the "standard" is, without having done the necessary research on actual usage of a variety of groups in differing situations. Thanks to the work of Labov and others, we have made a begining on this for American English. Linguists have also followed in the tradition of the grammarians in insisting on excessively rigid rules of usage; which exclude much that is normal in relaxed conversation. The occasional attempts by linguists to replace traditional rules with new ones based more closely on current usage (such as the "pre-verbal" and "post-verbal" notion used to account for *It's me* and *who do you trust?*) amount to a palce revolution only; such teachniques have perhaps contributed to the dethroning of the purists, but are reminiscent of the well-known political stratagem of "going to the people".

Another cardinal point in the philosophy of American linguists has been the insistence that our field is a descriptive science, and is not concerned with prescriptive statements. Looking at some current articles, bristling with asterisks, and noting that many of the asterisked sentences are quite acceptable English usage (usual in contexts the author did not happen to be thinking of), one wonders how different these prohibitions are from the dont's of the grammarians? If we investigate the basis for these asterisks, we note first of all that the rules which apply to intellectual discussions, about usage are closely allied to the rigid rules for written and formal language, and are rather different from the rules applying to spontaneous conversation. Further in these linguistc discussions, decisions are made about "grammaticality" without benefit of context and without the stimulations provided by interaction; such decision reflect the linguists reactions to a formal structure considered by itself, rather than as part of a communication act. We do not really know what such decisions are based on: it is possible that the decision to call a sentence "ungrammatical" is often based simply on the fact that we have not heard any similar sentence often enough for it to be familiar. (If we really start listening, it is surprising how many of them we can hear.)

Instead of asking whether there might not be different sets of rules operative, some linguists have used a distinction between "competence" and "performance" to account for these discrepancies. (whose competence? It's the linguist's of course. It doesn't matter whose performance.) Whatever language-learning ability a person may have in his head at birth, he learns a language through interaction, and (unless he is a linguist or some other form of arrested development) his competence is actuated mainly in interaction situations. By what right does the linguist assume that his knowledge of his native language is a microcosm of the *language*, and that it can be used as a representative speciman of the speech of the whole community? Or, if the linguist accepts the judgements of other native speakers when they contradict his own, how does he select the speakers whose judgement he accepts? The evidence of "native intuition" is considered to be primary data. Whose intuition? One thing which Labov's work shows is that if we only look at "standard" usage, we often see only an incomprehensible fragment of a whole picture. (One reason, of course, for not asking for the judgement of non-standard speakers is that their intuitions about some of our non-starred sentences might be very unflattering to us.) Considering what I have said about the social roles played by grammarians in the past, it would seem that the linguist is the *last* person whose intuition about usage should be considered valid. The current behavior of some linguists seems very similiar to that of the old-time grammarians, in that it attempts to put control of defining acceptable forms of the language in the hands of that minority who enjoys making up sentences and playing with words; in the context of the 20th century, it is merely another aspect of the dominance of the intellectual.

Conclusions

Social variation in language is a manifestation of social structural barriers in a society. There are a number of processes which can influence the amount of linguistic distinctiveness of social variants.

Formal education is one of the most powerful tools for influencing linguistic usage, as well as peopl'es attitudes about language and linguistic variants. On the other hand, it is the attitude of the politically dominant group in a society which will determine whether the educational system will be used to facilitate the education of all segments of the society, or to legitimize the exploitation of some segments by others.

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NEUTRALISATION AND STRUCTURAL COORDINATION

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The concept of neutralisation is fundamental to Trubetzkoy's *Principles of Phonology*. In operational hierarchy it precedes the notions of distinctive features and opposition.

The classical example given by Trubetzkoy is that of Oriental Caucasian and Japanese. Both these languages are known to have the same set of vowels: i, e, a, u, o. In Caucasian, the consonantal correlation is between 'round' and 'unrounded'. This correlation is neutralised before and after 'u' and 'o' which presents the structural correlation as u : o : : i : e : a. In Japanese, on the other hand, there is a correlation of palatalised and non-palatalised consonants which is neutralised before the front vowels 'i' and 'e'. This neutralisation presents the vowel structure as u : o : a : : i : e.

Traditionally, the Punjabi vowels are presented as short and long I: i : : U : u : : ə : a. However, this correlation is structurally untenable if we consider the overall system of neutralisations. Under mid tone, the vowels I, U and ə are short and centralised but the quantity as well as quality of these vowels are subject to considerable variations. Under high tone, all vowels are short and higher as compared to under mid tone. Under low tone, they are very low and even longer than under mid tone. Furthermore, in pre-tonal and word final positions the vowels are comparatively short. In these three positions, under high tone (syllable finally) and in pre-tonal and word final environments, there is neutralisation due to phonetic ambiguity between 'I' and 'e', 'U' and 'o' and 'ə' and 'ɛ'. The Punjabi speakers hesitate between 'I' and 'e' in words for 'who', 'bank'; between 'U' and 'o' in words for 'leper', 'called'; between 'ə' and 'ɛ' in words for 'to say', 'stay, bear'.

Under high tone, the low vowels 'e', 'o' and 'ɛ' are phonetically higher and centralised and are easily confused with 'I', 'U' and ‘ə’. This problem is also reflected in the Gurumukhi writing system where there is always a spelling controversy about the vowel signs SIàri and lã or ‘I’ and ‘e’, ə̄kəṛ and hóṛa or ‘U’ and ‘o’, mUkta and dUlaiã or ‘ə’ and ‘ɛ’.

This system of neutralisations presents the vocalic rapproachement as I : e : : U : o : : ə : ɛ : a. Neither quantity nor quality could be taken as the deciding criteria since both are subject to considerable variation. The vowels I, U, ə are distinct from both sets of vowels i, u, a and e, o, ɛ. The only valid question is that how they are related to each other and what sets them apart in a proportional oppositional system. The distinctive feature approach is of no help here. It is the neutralisation that establishes the basis of mutual rapproachment which presents the structural network as I : e : : U : o : : ə : ɛ.

This analysis is equally valid for Hindi where the corresponding conditioning factor is ‘h’. Before ‘h’ there is a parallel system of neutralisations as is evident from the words for ‘this’, ‘attachment’, ‘say’ where the realisation of ‘I’ or ‘e’, ‘U’ or ‘o’, ‘ə’ or ‘ɛ’ is quite ambiguous and these otherwise distinct sets are neutralised.

Another example of structural coordination due to neutralisation map be given from the vowel systems of Finnish and Polabish cited by Trubetzkoy. In Finnish we have a sort of vowel harmony which results in a general neutralisation of front and back vowels as opposed to the constant distinction between round and unrounded vowels of the same degree of aperture. In Polabish, however, the structural coordination is just the opposite. There is a correlation of palatalised and non-palatalised consonants which is neutralised before all front vowels. This results in maintaining the opposition front/back vowels as consonant as opposed to the neutralisation between round and unrounded vowels. In other words, it is the process of neutralisation that is the deciding criterion for structural coordination.

There is, however, a lot of confusion about neutralisation in the distributional school. This is mostly because the key term of Trubetzkoy's phonology, the phoneme, is also used by the distributionalists. The distributional phoneme is related directly to allophones. In other words, the basic analysis follows the argument that ‘a’ becomes or is actualised as ‘b’ in the environment ‘c’. In spite of all the debate on the American scene today, the generative phonologists or put in better, the generative phoneticians are doing exactly what was the main underlying approach of the Bloomfieldian school. For a distributionalist, 'p' and 'b' are two phonemes if they oppose (contrast) each other with significant semantic differentiation and then they are described according to the various allophonic occurrences. If in a position, the opposition p/b is neutralised, it is considered as simply a matter of the occurrence of a given allophone, say, p. In Trubetzkoyen terms, the concept of phoneme is meaningless without the correlated phonemenon of opposition and neutralisation. Opposition presupposes the possibility of neutralisation and both these together establish the mutual rapport of two or more than two sounds which must be considered within the framework of a given structure or a system. In structure, the notion of distinctive feature plays but a secondary role. The distinctive feature approach did not accept the notions of neutralisation, opposition and structure from the very beginning of the Prague School movement (from 1928 at the Hague Congress) though it has only recently come out with its various indirect implications. (The generative phoneticians apparently started from Jakobson's distinctive features and apriori binarism but have in fact only extended the notion of distributional allophones to the so–called universal phonetic features with the traditional 'a' becomes 'b' in the environment 'c'. Both the notions of distinctive features and binary opposition are discarded in the latest approaches in generative phonology.)

The distinctive feature approach does not operate within the framework of structure and thus looks for some universal absolute distinguishing features and runs into all kinds of impasses. For example, if we consider fortis / lenis as the binary distinctive features of French t/d, we realise that this distinction applies not only to t/d of 'ton' and 'don' but also to the medial consonant of 'medecin' and 'jette ça'. However, if we take the distinguishing phonetic term as conventional and not descriptive and follow the structural pattern, we will set up a parallel system of French consonants as p/b, t/d, f/v. The "distinctive features" are subject to considerable positional phonetic variations and cannot be taken as the deciding criterion. If we consider the distinction between high and low tone in Punjabi as only the high or low pitch, it would create all kinds of confusions since the high tonal word at the end of a sentence has a much lower pitch than the low tonal word occurring sentence initially under high intonational pitch.

Finally, neutralisation and consquently opposition may or may not be a binary proposition. In Spanish, the three way oppositions m/n/ñ are neutralised in certain implosive positions and it is not possible to establish a bilateral correlation in this case. The concept of binary opposition is not practicable in a number of other languages. It does not hold good for any Indian language. Even in the sub-system of stops, we have either three-way or four-way or even five-way proportional oppositional system: p/b̖/ph in Punjabi, p/b/ph/bh in Hindi, Marathi etc. and p/b/ph/bh/ḅ in Sindhi with an extra series of implosives. In Tamil, the situation is even more complicated where we have only p/t/ṭ/k without any significant opposition with either the voiced or aspirated counterparts. We are concerned with only correlative units. Normally, voicelessness presupposes an opposition with voice and aspiration with non-aspiration but in Tamil this distinctive feature approach would be completely irrelevant. This is true also of other languages where units like "h, l, r" may not necessarily have corresponding oppositional units.

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A PALATALIZING AND VELARIZING DIALECT OF KANNADA

M. Chidananda Murthy

It is well known that Kannada is a non-palatalizing language unlike Tamil, Malayalam and Telugu where palataization occurs under certain conditions. These conditions have been worked out in detail by scholars and so they need no mention here. It is very interesting to note that there is palatalization in a dialect of the Kannada language and this fact presents a few very interesting features, which, I feel, are worth presenting here[1].

The dialect which is referred to is spoken in an area which roughly includes Holenarasipur, Channarayapatna Taluks of the Hassan District and other adjacent areas. Unless a regular field survey is conducted we cannot determine the boundaries of its usage. The sample which I have collected comes from the Holenarasipur Taluk, and is representative of the dialect, which, purely for convenience sake, called the Holenarasipur dialect.

Palatalization is regular, before front vowels i, ī, e and ē. According to this, initial k- and g-become c- and j-. Examples:-

kivi	civi	'ear'
kitaki	citaki	'window'
kivu	civu	'pus'
kere	cere	'tank'
kelagina	cellan ceri	'lower street'
kelu	celu	'listen'
kempu	cempu	'red'
kenda	cenda	'hot coal'
kenne	cenne	'cheek'
gida	jida	'plant'
gini	jini	'parrot'
gitu	jitu	'line'
gere	jere	'line'

genu	jenu	'a measurement'
gey	jey	'to do'

It is to be noted that palatalization takes place only in the initial position and never in non-initial positions. kitaki becomes citaki and not* citaci; ragi does not become* raji, but remains as ragi. It should also be noted that palatalization takes place irrespective of whether a retroflex follows or not.

Before non-front vowels, k – and j – remain as they are. Examples: *kalu* 'leg', *kannu* 'eye', *kolu* 'stick', *kudlu* 'scythe', *gundi* 'ditch', *gari* 'feather', *gudu* 'nest' etc.

Palatalization is regular without an exception. However two words which look like exceptions need some explanation. Though the old Kannada word for 'hand' is *key*, this word has come to be pronounced in modern kannada as *kai* or *kayyi*. As a result, it has not been palatalized in this dialect. Another apparent exception is *capala* which comes from *kapala* 'cheek' (Sans. Kapala 'skull'). One possible explanation is that the word *kapala* was pronounced as *kepala* and got palatalized. There are other examples where -a- of the first syllable is pronounced as -e-. The existence of the word *kenne* meaning 'cheek' might have contributed to the change in articulation.

Equally intersting will be velarization, analogous to palatlization. The same rules which operate in the case of palatalization operate here also. Accordingly, initial c– and j– before i, ī, e and ē become k– and g– respectively.

Examples:–

celu	kenu	'scorpion'
cembu	kembu	'a small pot'
ceccu	keccu	'to beat'
cennagi	kennagi	'fine'
cendala	kendala	'an outcaste'
cila	kila	'a bag'
jirale	girale	'cockroach'
jigane	gigane	'a leach'
jirige	girige	'cumin seed'
jenu	genu	'honey'

In non-initial positions and before non-front vowels c– and j– remain as they are.

Unlike palatalization, velarisation has not operated regularly, and as a result, we have a host of words which stand unaffected. For example: *cinna* 'gold', *cilaka* 'bolt', *jipuna* 'miser', *jigutu* 'to nip off', *cikkanna*' younger brother among elder brothers' and a host of others form clear exceptions.

The regularity of palatalization and the irregularity of velarization seem to suggest the following:

(1) Among the two, palatatization operated earlier and affected universally.

(2) Owing to palatalization, some clear contrasts were lost. For example, when *kelu* 'listen' became *celu* or *cenu,* it could have been easily mistaken for *celu* 'scorpion'. Hence, to re-establish the contrast, the word *celu* 'scorpion' might have been changed to *kelu* or *kenu.* The same case is with *kitaki* 'window' and *citaki* 'a snap with the middle finger and the thumb', of the standard dialect. The tendence for velarization, thus once begun, seems to have affected a large number of words, but would not spread to each and every word.

Both these changes have not excluded place-names and personal names from their operations. Thus, the personal names Kempanna, Girijavva, Girigaude and Cennappa have been changed to Cempanna, Jirijavva, Jirigauda and Kennappa. The place names Keluru and Kikkeri have been changed to Celuru and Cikkeri.

It is very difficult to say when and how these changes occurred in this dialect. To speak of any external influence is futile—since the area of this dialect lies quite in the heart of the Kannada area, and secondly, these changes have their own characteristics. I have gone through a number of inscriptions of this area, which range from the eighth century upto the beginning of the twentieth, and have failed to come across with a single palatalized or velarized form recorded in the inscriptions. Again, it is rash to conclude that the changes have occurred recently, in this century. The palatalized and velarized forms are restricted to the uneducated people and are scrupulously avoided by both the educated and the urban people. The forms are considered sub-standard. Even the uneducated have two sets of forms-one standard, and the other sub-standard. When questioned, they give the standard forms only. When they are talking among themselves and in rapid speech they use the sub-standard forms very naturally. One of my informants gave *gida* 'plant' only and persisted that it is the only word he knows. A little later in rapid speech, he used *bale jida* 'banana plant' two or three times. The same thing happened in the case of *gili* and *jini* also. It so often happens that the students of this area go to other parts and use *cere* and *citaki* unconsciously and are ridiculed by their fellow students. The village school teachers and the 'modernized' uneducated village leader looked down upon the dialectal forms. As such, when the villagers come to know that we are trying to elicit their dialectal forms, they at once begin to suspect that we are making fun of them. Some of them believe that the forms belong to *halagannada* or old Kannada. The result of all this is that the dialect is gradually losing its characteristics and is tending towards standardisation.

I do not know whether palatalization and a corresponding velarization have occurred simultaneously in any dialect or language of the world.

(Paper presented to the First All India conference of Dravidian Linguists, Trivandrum 3/4-6-'72).

FOOTNOTE

1. This dialect was first noted by me in 1966 and I discussed it, hinting at some of the salient points in my paper "Mysore Kannada" Published in *Suvarna Sancaya* (University of Mysore, Mysore, 1967). pp. 264-5. Dr. D. N. S. Bhat made mention of this dialect in one of the issues of the Linguistic Survey Bulletin (of Deccan College, Poona).

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EAST-WESTERN CULTURAL WORDS

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This article is an English version of the first two parts of my contribution, "West-östliche Wortbeziehungen", to the Mèmorial Henri GKÈGOIRE, in Byzantion, which in spite of its size was unfortunately published in three instalments, in vols. XXXV (Bruxelles, 1965), pp. 495-503, and XXXVIII, 1968, pp. 411-421, and the pertaining addenda in vol. XL, 1970, pp. 240-244. Notwithstanding this inconvenience to the reader, this English version which differs, apart from some additions, in a few details, but not in essence from the original German article is now presented. The article had three parts, dealing with three different word-groups, namely that of Modern-Greek tserbou'li "footgear; slippers, light shoes", Late and Modern-Greek neró "water", and Turkic *pul*, Persian *pul*, Armenian pˇot, Greek phóllis, Italian *bollo* "small coin. stamp, etc.". As this latter has no relations to India and the Dravidian world, I omitted it from the present article, but the first two etyma have quite important parallels in the Dravidian languages, and therewith they may well be considered in the context with the European word for pearl for which Dravidian relationships can be detected, however with the difference that in the latter case the source of the European word for pearl is to be found in one or some of the Dravidian languages, as I try to show in Orientalia Suecana XIX (Uppsala, 1971).

I. Modern Greek tserbou'li, tzerbou'lia ntr. pl., "footgear; slippers, shoes."

During the discussion of the Oriental Altaic origin of Old-Russian *sapogz* "boot". Other Slavic terms for footgear were discussed, among them Serbo-Croatian *cîpela* "shoe', and Hungarian *cipo''*, *cipello''* "id.", from which BERNEKER, "Slavisches Etymologisches Wörterbuch", I, p. 130 derives the Serbo-Croatian word. In this connection, Modern Greek tserbaúli was thrown into the discussion by GRÉGOIRE when the article had not yet been written down (cf. K. H. MENGES, "The Oriental Elements in the Vocabulary of the Oldest Russian Epos, The Igor′ Tale"; Monograph No. 1 of "Word", New York, 1951; pp. 46 ff). While Serbo-Cr. _cìpela_, Hungarian _cipello′′_ and the two Modern Greek words do not seem to have an immediate connection-except that by their semantics-, together with O.-Russian, Old-Cherch-Slavic _crěvii_, m., "calceus, hupódēma" _crěvije_, n., sándaloi "and its family, they nevertheless seem to represent one group that might go back to one etymon. The words of this family exhibit a very peculiar geographical distribution that struck me at a time when I had almost entirely forgotten about _ci′pela_ and tserboùli.

Concerning the Hungarian word, BÁRCZI in his Hungarian Etymological Dictionary ("Magyar Szòfejto′′ Szo′tár"). p. 33, merely states that its etymology has not been established. Also in this case, as in that of other intricate loanwords, mostly being cultural borrowings, he is not revealing since, as a good positivist, he does not step off the solid ground of well-established facts. But the surface of this Earth does not everywhere consist of solid ground, and on occasions one is faced with the necessity to leave, at least for a certain while, this solid ground to which one's feet are accustomed...

The Balkanic word–sib of designations for a certain kind of light footgear which was mentioned above and probably belongs to one family has its exact correspondence in the common–Slavic etymon, *_cervī_–, extant in all Slavic languages beginning with Russian–Church–Slavic _crěvii_, hupo′dēma meaning "peasants' shoe, shoe" (cf. BERNEKER, Slav. Et. Dict., I, 151, and VASMER, "Russisches Etymologisches Wörterbuch", Heidelberg, 1950–1958, vol. III, p. 319). With regard to *_cervī_–, all Slavic words derived from it and their various meanings, the essential statements were made by I. S. VAXROS in his book "Naimenovanija obuvi v russkom jazyke" ("Terms for footgear in the Russian language" I, Helsinki, 1959, pp. 191 ff.) Modern Greek tserboúli, not mentioned by VAXROS, is particularly close to South–Slavic forms such as Serbo–Croatian _crëvlja_ and Bulgarian (dial.) _czrvúli_. The Serbo–Cr. form exhibits the regular Slavic development, while the Bulgarian is a cross-breed with the Modern Greek word. This Slavic etymon has its parallels in Baltic which, however, are all loans from Slavic, furthermore in Indo–Iranian, Sanskṛt _carman_– "hide, skin", Old–Iranian (later–Āvestā) _carəman_–, n., "skin, leather" (BARTHOLOMAE, "Altiran. Wörterbuch", 582), Modern Persian _carm_ "skin, hide, leather; cow-leather for making sandals or soles of shoes and slippers; coarse camel–

leather'' (STEINGASS, Persian-Engl. Dict.). The Slavic word was often put into one and the same etymological group with proto-Slavic **cervo* "belly, stomach, abdomen" and its sib which likewise lives on in all Slavic languages, wherewith the semantic problems seemed to be soluble by a détour via one of the meanings of Old-Russian *cerevo* "belly, abdomen", namely "skin, hide from the belly or abdomen'," so that the word, in this way, could be ranged together with derivatives of the IE root **(s)qer-/*(s)qor-* "to cut, cut away, off, etc.," in the sense of "something cut off, (as e. g.) skin, leather" (cf. VASMER, l. c., BERNEKER, I, 151, and work quoted by VASMER, l. c.). Nevertheless, the question remains whether the meaning "skin of the belly" and moreover "leather from it" was the primary meaning of **cervī-*, *crȅvii*, Serbo-Cr. *crëva, crëvlja*, etc., Bulg. *cərvúli*, for, wherever the Slavic word does have this cosignificance, it seems to be based upon popular etymology and ensuing contamination. But apart from this problem, this major Slavo-Balkanic word-family has its closest relatives in - Southern India, in the Dravidian languages. Here occur surprisingly congruous forms as well as meanings. From the Dravidian Etymological Dictionary (by T. BURROW and M. B. EMENEAU) alone the following Dravidian words may be quoted (no. 1633): Tamil *ceruppu* "sandal, slipper, shoe", Malayalam *cerippu* "id.", Kota *kewr* "id"., Toḍa *kerf* "id.", Kannada *kera, keravu, kerahu, kerpu* "id.", Telugu *ceppu* "id.", Kolāmī *kerri* "shoe", Najkī *kerri* "shoe, boot", Pārzī *cerup, cerpu* "sandal", Gōṇḍī *sarpum*, (W) *sarpa*, (M) *harpunz*, (L: Maṛiā dialect) *helpus*, (A) *serpum* "id.", Kuwi (F) *sepp*ū "shoe", (S) *cepunga* "shoes". These are compared with Hindī *capp*ū, *cappal* etc., with reference to *capor*ā in TURNER's "Comparative and Etymological Dictionary of the Nepali language", London, 1931. Not quoted are the forms from Tuḷu, *cappalu*, *cappa*ḷû which are put into the same category by BURROW in his "Dravidian Studies, III" (BSOAS, XI, 1943/46, p. 124). In this article dealing with the palatalization of *k-* in front of *e* and *i* to *c* in Tamil, Malayalam and Telugu as against its preservation in the other Dravidian languages, he supposes the following 1ndo-Aryan words as possibly being loanwords from Dravidian: Hindī *k'arp*ā "sandal" < **k'arappa-* (to be derived like kannada *karahu* > **karappu*) and, from a palatalizing language, Marāt'ī *sappaḷa* "sandal" (ibidem, p. 124, n. 3). Very much like Romance, the Dravidian languages offer numerous and intricate - thus extremely interesting and instructive – examples of borrowing and re-borrowing within one and the same language-family, along with those either taken from neighbouring families or having been influenced by them. In addition to that, there occur actual dialect and language mixtures of more profound consequences. In this respect, the Northern Dravidian languages that remained without literature or any literary tradition and are found in the diaspora within compact Indo-Aryan neighbourhood, often offer considerable difficulties. With this in mind, BURROW, in the same article (p. 129) reverts to the group of Kannada *kerpu* etc., "footgear" : Kuwi *sepp*ū is, like many other words, a borrowing from Telugu, likewise Gōṇḍī *sarpum*, as *k*– in front of palatal vowels does not undergo palatalization to *c*– in Gōṇḍī; while Kuwi *sepp*ū shows the same assimilation of *-rp-* to *-pp-* as Telugu *ceppu*, Gōṇḍī is likely to have borrowed its form at a period when that assimilation had not yet begun, as BURROW states. A form such as **kerapu* or **kerappu*, the prototype of Kannada *kerahu* as assumed by BURROW, would be very close to, or even identical with, a form to be assumed for proto-Dravidian. Western sources of this word that would date back to that remote period do not exist.

The connecting links between the Dravidian and the Mediterran-East-European area are so far not clearly recognizable. There exists Arabic *zarbūl*, designating a kind of light footgear, considered by Gustav MEYER (in "Neugriechische Studien", II", p. 88), however erroneously, as the source of the Modern Greek word. The Arabic form suggests non Semitic origin; the word was not borrowed from Arabic by Turkic or Persian. On the other hand, it does not appear to be a recent loanword in Arabic. Dr. Ariel BLOCH was so kind as to call my attention to DOZY's derivation, in the "Suppléments aux dictionaires arabes", of Arabic *zarbūl*, *zurbūl*, pl. *zarābīl*, and the alternate *zarbūn*, pl. *zarābīn*, from Middle-Greek sérboula, probably ntr. pl., a word which is said to go back to Lat. servulus and which will be discussed later on, wherewith DOZY refers to a passage in Konstantinos Porphyrogennetos, to be quoted below, and to the derivation of Spanish *servilla* "espèce de chaussure en maroquin" from *serva* as parallel. In his book "Noms de vĕtements chez les arabes", in which this word is treated (p. 224), DOZY mentions another word, *śarbīl*, however, without any further explanations. This latter is also found in Osman in the same form and with the meaning "slippers without heels" (REDHOUSE, "A Turkish and English Lexicon", Constantinople, 1921; p. 1121). Relationships of these two Arabic words with the one as well as with the other zone of distribution of this large word-familiy designating a certain kind of light footgear are evident. If one takes into consideration the extraordinarily expansive trading activities of the Arabs not only in the Mediterranean, but especially those along the ocean coasts of Dravidian India, Malakka and as far as Indonesia, Siam and Southern China, Arabic borrowings not only from the Greek-Byzantine culture, but likewise from that of Dravidian India are to be expected. While *śarbīl* could with relative ease be explained as being from Byzantine sérboulon-and likewise sérboulon deriving from *śarbīl*–, the other etymon, *zarbūl, zarbūn,* cannot be derived from the Middle or Modern Greek form – or vice versa – without the assumption of at least one intermediary connecting link. Likewise, neither of the two Arabic terms can be connected directly with words from the languages of the Dravidian nations who live on the sea. The greatest difficulties are found with the initial consonants, for, in whichever direction the borrowing be supposed to have been made, Middle Greek or Modern-Greek tz– or ts– is neither a rendition of Arabic *z*– borrowed without intermediaries, nor is Arabic *z*- one of Middle-Greek or Modern-Greek tz–, ts– (or s), nor of Dravidian *c*–, *s*– (or even *k*-). Thus, the Slavo Balkanic forms are closest to the Dravidian ones with initial *c*– as in Tamil, Malayalam, and Telugu. It might be assumed that in Arabic there existed further variants of this etymon, as can be observed in the case of loan words, especially re-borrowings, but that only, the two forms with initial *z*– gained preponderance in the literary language.

In the small 'Etumologiko' Lexikó tés koinēs neoellenikēs'' by N. P. ANDRIŌTĒS (Athens, 1951), containing only about 300 pp., to which Günther REICHENKRON kindly called my attention, only the form tserboùli, ntr., "tsarou'chi", "coarse light shoe" is listed, on p. 266, which likewise is derived from *serbou'lion as a deminutive of M.-Gr. sérboulon and this from Lat. *servulus*. In addition to this, ANDRIŌTĒS refers to the afore mentioned work by G. MEYER. The derivation offered by ANDRIŌTĒS as well as by DOZY is an ancient popular etymology which, according to SKARLĀTOS O BYZANTIOS, "Lexikon of our Greek dialect, interpreted in Ancient Greek and French" 3rd ed., Athens, Constantinople, 1874, p. 423, is already found with Konstantinos Porphyrogennetos: "*Servu'li* and *cervúli*, peasant-shoe in Bulgaria; '*servula*, in common usage for servants 'shoos', says Kons Porphyorogennetos. Useless is its coincidence with ancient qrbu'te, cf. tsaroúchi 'peasant-shoe (for equipment)'. It is hardly possible to understand how and through what intermediaries a Latin initial *s*– should have become an affricate, ts. (=*c*–/ć–/ć–) in Modern Greek. Latin and Romance *s*– is always regularly represented as s–. It remains not only questionable, but it is improbable that tsérga, f., "mállinē-koubērta", "wollen blanket", attested from late Byzantine Greek on, listed by ANDRIŌTĒS immediatley after tserbou'li and derived by him from Slavic *cerga* (cf. infra, last paragraph), this from a Romance **serga* < Lat. *sēricus* (it should rather be *sērical*) < Greek serikós, –é "Chinese;

silken", should have originated, notwithstanding its semantics, as a result of some incontiguous assimilations or dissimilations and unknown contaminations. THUMB, quoted by ANDRIŌTĒS, supppses, in I F, XIV, 344 ff., the mediation of Balkan languages, however, he fails to name those particular languages where this might have occurred. ANDRIŌTĒS, entire derivation leads to no solution. Latin, Romance, and generally any foreign *s*– is never rendered in Middle and Modern Greek by anything but *s*–, even the Turkic ṣ– which, in position before velar vowels undergoes velarization with various degrees of intensity.

If sérboula is genuine and not the result of an adaptation, due to Byzantine popular etymology, of the Slavo-Balkanic etymon to Latin servulus and a designation for sandals or slippers derived there from in the Romance Mediterranean area, known there since an unspecified period, the two Greek terms must etymologically be separated and considered heterogeneous, while the forms with tz–, ts– are to be considered belonging with the large Slavo-Balkanic sib. The supposition of a common origin of all these terms designating light footgear from one etymological nucleus appearing most abundantly represented by the Slavo-Balkanic and the Dravidian forms, seems to have in its favor a considerably higher degree of probability.

Further, there exists the Latin etymon *carpisc (u) lum* "kind of foot gear", attested since the historian Flavius Vopiscus who flourished toward the end of the III-rd century A. D. In their Latin Etymological Dictionary, I, p. 172 WALDE-HOFMANN compare this with a few other Indo-European terms for footgear, particularly well represented in Keltic: Old-Irish *cairem* "shoemaker" (*karpjamos), Kymric *crydd* "id." (*karp'jos), Cornish *chereor*, Bretonic *kere*, *kereour* "id.", and Baltic: Old-Prussian *kurpe*. Lithuanian *kùrpè*, Latvian *kur̄pe* "shoe" (*kūrpjā), and consider it a derivative from the IE root *qerep/ *qorep–, etc., "to cut", being itself a derivative of *(s) qer-/*(s) qor-, "id." which, as nominal root, has, according to them, the meaning of "Zeug-order Lederlappen", "a rag from cloth or leather"; "and therefrom: shoe". This latter semantic deducation is not cogent, since carpisculam is attested quite late in Latin, and therefore is, as WALDE and HOFMANN say, hardly genuine Latin but probably foreign, adding that this is definitely the case with *carpotinurs* "from raw-leather" (occurring with Catullus) < Greek karbàtinos "id." which they derive from the same IE root, but BOISACQ ("Dict. étym de la langue grècque", p. 412) considers it being of unknown etymology. This question is to be investigated further, and this not without carefull consideration of non-Indo-European Mediterranean etyma that might underlie the Latin and Greek terms, or, at least, have influenced and modified derivatives from the IE root **(s) qer-/*(s)qor-*. As an example for etymological problems of that order, WALDE-HOFMANN's derivations frome the same IE root as listed under *carpō* "to cull, pluck, divide" (ib., I, 172) are to be revised, for words such as Albanian *karpä, karmä* "cliff, rock", *krep* "rock, slope, declivity" and the "Thrakan" name of the Carpathian kàrpatēs, are pre-Indo-European and can be connected with the IE root **(s) qer-/*(s) qor* but as an ancient, Nostratic cognate, not as a descendant of it. - Both the above Latin *carpisculum* and Greek karbătions cannot be separated from the Solavo–Balkanic and Dravidian word–sibs discussed above. In this connection, Greek ârbùlē, mentiened by SKARLĀTOS, as superfluous, however, and ocurring as early as in the Classical period, is not without interest. These latter three words are worthy of a special investigation.

With the above-mentioned *cerga* only *cérga* can be meant, Bulgarian, "coarse tissue; tent, tent-cover", Serbo-Cr. *cērga* "tent; sail", Ukrainian *zérha* "wollen blanket"; BERNEKER, SlavEtDict., I, 145, derives the Slavic words from Osman *cärgä* "light tent, from wollen blankets; hut". In Osman, the word means "1. a small makeshift tent, a gypsy's tent; 2. a two-poled open marquee; especially, a marquee used as a porch to a royal encampment: 3. a circle of beaters who drive in game for a battue" (REDHOUSE, p. 719); meaning 3 is that of an etymologically heterogeneous homonym, "row, series, battle-range, rank, class, order" which is also Cayataj and Late-Ujyur (cf. RADLOFF, WB, III, 1790; DOERFER, "Türkische und Mongolische Elemente im Neupersischen", I, 291 ff.) and is the Mongolian *zärgä*, also < Manzu *zergi*, "id."; it was borrowed into East-Slavic, attested there in Old-Russian (since 1505), *cérga* (cf. BERNEKER, op. cit. sub *cerga* 2, and VASMER, III, 319). BERNEKER, in accordance with MIKLOSICH, traces Osman *cärgä* back to either Albanian *cergä, cergä* "wollen blanket; tent from blankets" or Modern Greek tsérga and considers Middle-Latin *sērica* its ultimate source which originally meant "Chinese; (>) silk" and later developed into Fr. *sarge, serge*, Ital. *sargia.* terms for linen or wollen fabrics. But as the Osman word also occurs in Cayataj and possibly is of Iranian origin, all the above Slavic and Blankanic forms are probably loans from Osman, the Slavic ones, however, apart from South-Great-Russian *cergà*, with unexpected accentuation that points to still unknown intermediary links. But, notwithstanding semantics, a derivation of *cerga*, tsérga etc. from Middle-Latin *sērica* is confronted with a considerable phonetic problem concerning the initial consonant. The one Romance form with initial affricate, isolated in Romance and limited to one Sardinian dialect, quoted by MEYER-LÜBKE, RomanEtymDict., no. 7848, sub *sērica*, but as an addition in parentheses, namely Campidanean *tzerga* (= *cerga*) "clothing furnished by the lord to the serf", along with Logudorese *atterga* "id.", with the reference to the above Balkanic words and Rumanian *cerg* "blanket" and the remark that their relationship to *sērica* is not clear – if there exists any relationship at all, might have been added here –, does not prove anything, since these forms presuppose contaminations which may have taken place under the influence of *tergum* "the back" *tergere* "to wipe off, dry" (MEYER-LÜBKE, no. 8663), as apparent in the Logudorese form, and the like.

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II. Middle-Greek, Modern-Greek neró "water".

One of the words that in Modern-Greek have replaced a Classical one, is the word for water, tó neró appearing already in Byzantine Greek – since when, is unknown to me, but it occurs in the homilies of St. Basil the Great (cf. infra). The usual derivation, commonly recognized ever since XATZIDAKĒS, works (quoted by ANDRIŌTĒS, l. c., 160) is that from nearón "fresh", scil. húdōr "water". As is supposed, in the sequence nearón húdōr "fresh water", the usage of the adjective nearón alone, with the omission of the substantive, the generic term húdōr became, with the progress of time, more and more common. This is, of course, possible, and similar examples are readily available from any language (cf. e. g. NE *pub* for *public house, tavern, inn,* etc.). Thus, SKARLĀTOS says, l. c., p. 315 sub nerón, along with which he also quotes nērón lacking with ANDRIŌTĒS: narós wet and liquid, 'spring water, fresh and drinkable (i. e. running water)', according to *Sophokles*. St. Basil the Great, in the sermon against the drunkards, writes nearón with omission of hudōr and has in mind chiefly just now scooped, i. e. "dew-fresh water". The explanation tò neōstì antlēthén "just-now scooped (water)" is found literally with SCAPULA, "Lexicon Graeco-Latinum novum", Basileia (Basle), 1579, col. 1094: nearòn húdōr "aqua recens hausta".

If the matter was only that of drinking-water, this explanation would be irreproachable; but nerò means generally "water". In proportion to the water resources on the Earth, fresh water occurs but in small quantities, and this not only in the Mediterranean semi-arid climate. Therefore, it is quite doubtful whether in this term a transfer of meaning or, at least, as considerable an extension of the meaning of nearo′n should have taken place as to designate all water in general, water kat′ exochēn

Although perhaps not the entire theory of the origin of nero′ from nearo′n be erroneous, the etymology of nero′ cannot be considered without the assumption of the influence of a generic term for water that on the Old Continent occupies a much larger area than the Indo-European and Uralic root **vod-/*ved-* etc. "water": the term in question is Uralo-Altaic and Dravidian. In the Dravidian family, its meaning of "water" is the basic one, while in Uralo-Altaic, it preponderantly occurs in meaning of "lake, turning a swamp, morass, marsh; swampy or moist depression or low-lying grounds; small creek; outlet of water; moisture, humidity, wetness". Dravidian (cf. BURROW & EMENEAU, Drav. Etym. Dict., no. 3057): Tamil *nīr* "water, sea, juice, liquor, urine, dampness, moisture; nature, disposition, state, condition", derivatives *nīrmai* "property of water, as coolness", with complete reduction of the initial *n-*, on which see BURROW in BSOAS, XI, "Dravidian Studies, V", pp. 595 - 616, *īr* "moisture, wetness, freshness, greeness", *īram* "wet, moisture, humidity, freshness, greeness, coolness", *īrali* "to become moist, damp"" *īri* "id., to become cool, be benumbed by cold or disease", *īrippu* "dampness, moisture", *īrija* "damp, wet, cold"; Malayalam *nīr* "water, juice, moisture", *īram* moisture, dirt", *īrikka* "to grow damp", *īrmam, īrman* "damp cloth", *īṟam* "moisture, dirt, wet cloth", *īṟan* "wet cloth"; Kota *nīr* "water, semen"; Toḍa *nīr* "water", *nī pāw* "watering place in a stream", *īrm* "dampness"; Kannada *nīr* "water", *īra* "moisture, dampness, wetness", Koḍagu *nīry* "water": Tuḷu *nīrụ* "id"; Telugu *nīru* "water, urine", pl. *nīḷḷu* "water", "die Wasser; Gewässer", *īmiri* "moisture"; Kolāmī *īr* "water"; Naikī *īr* "id."; Parji *nīr* "id.; general appearance: character"; Gaḍba *nīr* "water"; Kūī *nīru* "juice, sap, essence"; Brahūī *dīr* "water, flood-water, juice, sap". The DravEtymDict. compāres with it Skṛ. *nīra-* "water, juice, liquor", *nīvara-* "water, mud" which, according to BURROW, l. c., BSOAS, XI, p. 611, and EMENEAU, "Linguistic Prehistory of India". Proceedings of the Am. Philosophical Soc., 98, 1954, p. 289. is a Dravidian loanword in Sanskrit. BURROW, ibidem, note 1, connects Skṛ. *nārā-*, f., "water", a rare word that is quoted by Manu in order to establish his etymology of the proper name *Eārayaṇa-*, with this same large Dravidian and Uralo-Altaic family; thus, according to BURROW, it cannot be considered as invented ad hoc, as BOETHLINGK and ROTH seem to suppose. Of the Uralic group, the Finno-Ugric cognates have already been gathered by BURROW (l. c., p. 611): Suomi *noro* "wet, swampy depression", *norua* "to be dripping, to trickle", Estonian *nõrendana* "id.", *nõrg* "water outlet, small creek, rivulet", *nirguma* "to be dripping, trickle", Lappic Norweg. *njoarra* "to flow", Mordvinian *nurge* "to be dripping", Mari *nörem* "to become wet, humid, moist", Xanty (Ugro-Ostjak) *nâr* "wet, humid", *nīrwẽṇ* "id.", Hungar. *nirk, nirok* "humor, succus", *nirkos* "humidus", *närs* "fresh, raw". From COLLINDER's "Fenno-Ugric Vocabulary", Uppsala, 1954, p. 41, the following may be added: Udmurt (Votjak) ñ*ur* "damp, wet (wood or grain); dampness, wetness, swamp, marsh", Komi (Zyrjan) ñ*ur* "swamp, marsh, bog". In samojedic, there are: Sölqup (Ostjak-Samojed) ñ*ar* (dialects of Narym, Jeloguj, Bajxa, Taz, and Karas), *narre* (Nacpumpokol'sk) "swamp, morass" (CASTRÈN, Samojedische Wörterverzeichnisse", StPetersburg, 1855, p. 288) and in South-Jukagir: ñ*or* "swamp, morass" (COLLINDER, 1. c.) In Altaic, this ancient etymon has been preserved only in those languages which are found outside of the semi-arid and arid climatic of Central Asia, namely in the Tungus languages and in Turkic Jakut: cf. Tungus Ewenki ñā*ru* "small lake, being grown over by swamp-moss" (dial. of Ṅorbokō), "swamp, swampy ground" (Sym), ñā*ruza* (Ṅorbokō), ñā*rus* (Urmī, Saxalin) "small lake having turned a swamp", ñā*rut* "lake being grown over by swamp-moss" (Stony Tunguska, Ṅorbokō, Ṅēpa, Upper Lena, Tungir, Aldan, Ucur); Lamutic ñā*ruqay* "puddle from melting snow"; Nānaj ñ*arun* "tundra (the Arctic moss steppe)"; Udi ñ*au* "swamp". Jakut has *nuora* "never drying out; swamp; thicket"; this word may have been borrowed, but it may just as well have been preserved since very ancient times. In view of the Tungus correspondences, the word should have been listed in COLLINDER's "Fenno-Ugric Vocabulary" on p. 145 in the section of "Uralo-Altaica", but prior to 1955, the Tungus words were for the most part still unknown.

In Uralic, there exist a few derivations of this word with ablaut, as e. g. the following already quoted by BURROW, 1. c.: Suomi *nurmi* "meadow", Komi ñ*ur* "swamp, morass", Mân'śī ñ*urm* "meadow", ñā*r* "wet ground", Xanty ñū*rĕm* "swamp". Furthermore, Eneć (Jenisej-Samojedic) *naura* "sap of trees" (Bajxa dialect) and *nára* (Xantaj dial.), *náda* (Bajxa) "moss" (CASTRÉN, "Wörterverzeichnisse..." p. 85) might be put into this category. They have their exact counterpart in the following Dravidian words that had likewise been listed by BURROW in this connection: Tamil *nurampu* "mud, mire" and Tuḷu *nurumbu* "alluvium, alluvial soil, which in the DravEtym Dict., no. 3071, have unfortunately been separated from the family of *nīru* "water" etc. and thus unwarrantedly appear as isolated. Generally speaking, it is regrettable and certainly of no advantage for comparative research that the hitherto known Uralo-

Dravidian parallels, the best of which have been established just by BURROW, have entirely been omitted from the Dravidian Etymological Dictionary.

As long as no parallels are known which might render their etymological connection more plausible, it is very difficult to answer the question of how the etymological relationship of these words for water in Greek on the one hand and in Uralo-Altaic and Dravidian on the other is to be accounted for. No doubt with the time such parallels can be found and will be found, but presently no parallels are available as yet. The existence of this etymon in Uralo-Altaic and in Dravidian is explicable on the basis of the genetic relationship uniting these three large families of languages. It is self-evident that the Greek word cannot be a loanword from either Uralo-Altaic or Dravidian – in contradistiction to e. g. tzerbou'ti, a loan – or migrant word. Maybe, neró is an etymon that only in the Middle-Greek period began to spread and therewith finally was adopted into the literary language, an etymon that since proto-Greek times existed in the language but in a few dialects – and that might ultimately date back to pre-Greek culture. The word is certainly to be connected with the root that underlies the names of certain water-spirits, later water-deities who in Greek mythology became quite well-known, important figures: Nēreu's, the son of Pontos "Sea" and Gaia ("Earth"), the husband of Doris, the ruler of the Aegear Sea under Poseidon, whose fifty daughters are the Nereìdes. In the instance of these names, the root has lengthening degree which seems to appear also in the Modern Greek alternate form nēró. This ancient and rare word, *nero'n *nēro'n that led the inconspicuous life of a non-literary word along with, or rather underneath of, hu'dōr, finally underwent contamination with nearas "fresh", one of the current epithets for the more usual hu'dōr which alone was recognized by the literary language and, as a consequence, became completely absorbed by the latter. For a very early period, the effect of taboo prohibiting the usage of this word as a common term for water might also be taken into consideration.

This argumentation may still appear as quite hypothetical, and it will remain so until parallels are found, but as a result of further and more intensive research in ancient word-relationships extending over giant areas and ascending into remote antiquity, the necessary parallels will be detected.

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THE DESCENT OF THE DRAVIDIANS

Kamil V. Zvelebil

I want to propose a sweeping hypothesis which consists of the overall following statements: The Dravidians were a highlander folk, sitting, sometimes round 4000 B. C., in the rugged mountaineous areas of North Eastern Iran (where they came into an extended contact with the speakers of Uralian/Altaic languages), whence, round about 3500 B. C., they began a South Eastern movement into the Indian subcontinent which went on for about two and a half millenia. 'Along the route', various Dravidian speaking tribes 'peeled off' the main stock, the first to come off being the peoples speaking some form of North Western Dravidian, who might have played an important, even a leading role in the ethnolinguistic composition of the Indus Valley peoples. The movement went on, and with it the 'losses along the route', until the Southernmost part of the peninsula was reached by the Proto-Tamils, who established, between 600–400 B. C., the first historically recognizable literate and highly cultured Dravidian-speaking civilization, preserving, of all Dravidian speakers, most of the identifiable features of the parent language.

This North-West to South-East movement seems to be somehow 'inherent', one is almost tempted to say 'innate' in the Dravidians, for it has continued even in protohistoric and historical times, carried on by the Tamils from the South of India into Ceylon, and further to various areas of South East Asia.

Let me now examine the points raised above more closely.

1. Dravidians–a folk of hillmen. This point is based on two observations: a) the names of various Dravidian peoples, b) god Murugan.

a) The names which various Dravidian peoples use to designate themselves have all roughly the meaning 'hillmen, men of the mountains' and seem to be derived from three Proto-Dravidian stems: **kō*, **malay* and **kunṯu*, all meaning 'hill, mountain'. From North to South these terms are as follows:

1. Brahui, i. e. *brā*' ūī : according to Andronov[1], the name is to be etymologized as **vaṭa* + *kō* + ī which means 'the people of the northern mountains' or 'the northern mountain-folk' (for **kō* cf. *DED* 1811 *kō* 'mountain').

2. Malto: *maleh* 'Malto' means probably 'hillman, mountaineer', connected with *DED* 3882 **malay*.

3. Kui <*DED* 1811* *kō* 'mountain', i. e. 'the folk of the mountains', sg. *kūenju* m., *kūali*, f., cf. also *kui* 'above, over, upon'.

4. Kuvi : *kūvīnga* 'the Parja Khonds' <*DED* 1811 **kō*; cf. also *kui* 'up, above; west'; *kūita* 'in the west'.

5. Koṇḍa: *kūbi* 'the Koṇḍa Dora' <*DED* 1811 **kō*; Koṇḍa is the Telugu term for 'hillman' (<**kunṟu, kunṟam)*.

6. Gondi : *koitur*, pl. *kōītōṛk* a Gond male'; f. *kōītāṛ* <*DED* 1811* *kō* : *koy, koya* 'Gond man' <id.

7. Koya : *koytanḍ* pl. *koytar* 'Koya man' <id.

8. Gadba (S) : *konḍekor* 'the Gadbas near Salur' <*DED* 1548 **kuntu* 'hill, mountain'.

9. Telugu : *kōdu*, kōduvāḍu 'a Khond'; *kōya* 'name of a tribe of mountaineers'. both <*DED* 1811 **kō*.

10. Malayalam : *malay*āḷ*i*, prob. connected with *DED* 3882 **malay*, Ma. *mala* 'mountain, hill-land'.

Another very suggestive etymological cluster is *DED* 1530 where we again find a number of tribal names derived from **kuṟa-m*, 'Kuṟava tribe of the mountains', cf. Ta. *kuṟiñcī* 'hilly tract, the mountaineous region *par excellence*'; *kuṟiccī* 'village in the hilly tract', Ma *kuṟumpan* 'caste of mountaineers in Wayanāḍu' Ka. *kurumba* 'a caste of mountaineers., Te. *korava* 'name of a tribe of mountaineers' etc., which may be connected with *DED* 1548 Ta. *kuṉṟu*, *kuṉṟam* 'hill, mountain' found well-attested in almost all South Dravidian and Central Dravidian languages.

In short, at least eight if not more Dravidian peoples (North, Central, and South Dravidian) call themselves 'hillmen, mountaineers'. Taken together with the data presented under b), I doubt whether this is incidental and without deeper significance.

b) Murugan, Ta. Murukaṉ "has been doubtless the pre-eminent God of the Tamils through the ages"[2] Not only that : we believe, in agreement with a persistent indigenous tradition, that Murugan has been the god of the Dravidians *par excellence*,[3] *the* Dravidian god. Any how, he had been the pre-eminent deity in the pre-aryanized Tamil classical age, and obviously in the protohistory and prehistory of South India. According to the Adichanallūr relics, it seems that Murugan worship was prevalent in southernmost India in the 10th Cent. B. C. if not earlier, that is during the prehistoric and protohistoric times, in the period which preceeded the first bloom of cultured and civilized Tamil society. We have no doubts that Murugan or Murugu, because of his intimate association with the hill-country (*kuṟiñci*). with Vaḷḷi, and with the Adichanallūr relics, was a Dravidian deity, only later Aryanized as Subrahmanya[4].

It is important that according to *Paripāṭal* 8:64, Murugan was the ruler of all the seven worlds ē*ḻulakum*ā*ḷi*), the supreme deity worshipped by ancient Tamils. There are many fascinating aspects of this deity (e. g. his probably intimate connection with the ancient bardic poets), but in this paper I want to limit myself to just one: Murugan's connection with *mountains*.

First, though, a world on the etymology of his name. *DED* 4081 shows that the etymon occurs in Tamil, Malayalam, Tuḷu and Koṇḍa and is thus reconstructable at least for South and Central Dravidian : Tamil *muruku* (to be segmented into *mur-u-ku*) 'tenderness, tender age, youth, beauty, Skanda', *murukan* 'youth, young man, Skanda', Ma. *murukan* 'id.', Tu. *murku* 'the young of an animal', *murl*é 'little, small, tender', Koṇḍ a *murli* 'young man'. Murugan was 'originally', primarily, the god of the hills. His intimate connection with the first of the conventional *tiṇais*, 'landscapes', the *kuriñcittiṇai*, or the mountaineous region, is beyond any doubt. Many textual references exist in the earliest Tamil literature to Muruku – Murukaṉ – Cēy. The most important are given below.

Muruku : Akam 22:11, 118:5, 138:10, 181:6, 232:14, 272:13, 288:4, *Ainkuṟunūṟu* 245:3, 247:3, 249:2, 308:4, *Kuṟuntokai* 362:1, *Maturaikk*ā*ñci* 38, 181, 724, *Naṟṟiṇai* 34:11, 47:10, *Paṭṭiṉappālai* 37, *Puṟam* 56:14, 259:5.

Murukan : Akam 1:3, 59:11, 98:10, 158:16, *Puṟam* 16:12, 23:3, 299:6: *Porunar*ā*ṟṟuppaṭai* 121.

Cēy : Akam 266:21, *Kuṟincipp*ā*ṭṭu* 51, *Kuṟuntokai* 1:3, 209:19 *Puṟam* 125:20, 14:9.

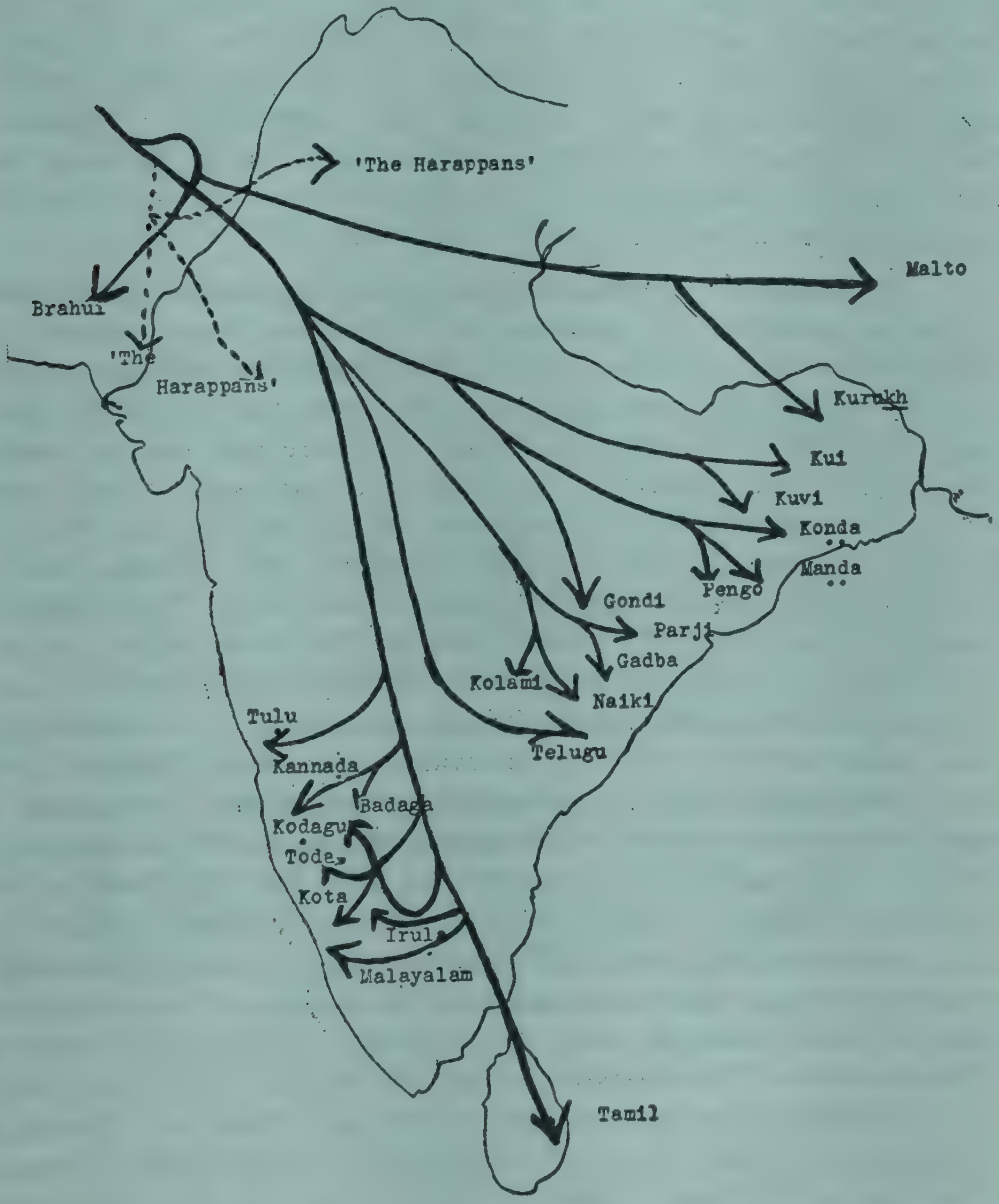
Cēyōṉ is mentioned in *Tolkāppiyam Poruḷ*. 5:2.

Cēy (DED 1607 *cē- < *kē- ;* the Proto-Dravidian name of the god was probably ** kēy, * kēyan/ * kēcan)* is another name of Murugan; *Cēyan* is a derivation of *Cēy*. There are yet other pre-Aryan names of the deity *vēlaṉ* 'spear – bearer' and *neṭuv*ē*ḷ* 'the large spear'.

There are two ancient texts which deal with Murukaṉ as their main topic (a part of *Paripāṭal*) but, above all, Nakkīrar's unique āṟṟuppaṭai ('message – song'). the *Tirumurukāṟṟuppaṭai* of the 5. - 6. Cent. A. D. According to the 5th *nūrpā* of *Tolk. Poruḷ.*, Cēyōṉ is the lord – god of the mountaineous region. However, this fact is best demonstrated by the *Tirumurukāṟṟuppaṭai* (TMK), a 'guide – book to Muruku', which, apart from being "un poéme inspiré" (P. Meile), is a true hymn on Murugan, containing an entire "Murukology" (C. A. Keller). This guide – book to Tiru Muruku is made up of six scenes, each of them presenting the god as dwelling at a particular mountaineous shrine or somewhere among the mountaineers: In the first scene (1 – 77), it is said of him that he likes to dwell on the hills (*kuṉṟu amarntu uṟaitalum uriyaṉ*). in the 5th scene (190 – 217), the mountain – folk drink and dance and the Red One dances with the girls on all the hills (*kuṉṟutōṟu āṭalum niṉṟataṉ paṇpē)*; it is his nature, his permanent habit (*paṇpu*), to live in the hills. Murukaṉ, who is young but who has been since the oldest times (288–290), terrible and fierceful, kind and loving at the same time, is a mountain god, dwelling in many shrines on the hills and mountains (think of the sacred Aruṇācala or Tiruvaṇṇāmalai, of Vēṅkaṭam of Tirupati which has only secondarily become a shrine of Tirumāl – Viṣṇu, not to speak of such famous temples as Paḷani). Naccinārkkiṉiyar in his commentary on TMK sees in the six seats of Murukaṉ described in the poem a reference to all hills in general, since Murukaṉ is a deity of the mountain. There are of course other and less clear indications which point in the same direction: the dances which seem to have formed an integral part of Muruku worship (i. e. *pōrāṭal*, the war – dance, *veṟiyāṭal*, cf. *Akam* 182:16–17, *Cilappatikāram* xxiv:62, and the *kuravai*) seems all to be connected with the mountains and the mountain – tribes, in particular the *kuravai*, performed by the Kuṟavar (*DED* 1530) and the Kāṉavar, both tribes of hillmen. Among the offerings to the god, there are at least two – *tinai* (millet, grown in the *kuriñci* region) and honey – which are typically products of the hills. Murukaṉ's marriage to Vaḷḷi, the lovely *vēṭa* girl (*DED* 4547 for *vēṭaṉ* 'hunter', *DED* 4351 for *vaḷḷi* 'climber, creeper') points also to the same general milieu of wooded mountains. In short, we may I believe with a fair amount of certainty conclude that * Muruku or * Murukan, *the* god of the Dravidians *par excellence*, was the god of mountains and hillmen.

It may be terribly premature and very far-fetched to draw conclusions from the two kinds of data presented above; and yet it seems that one may venture a rather daring hypothesis that the ancestors of the Dravidians were a folk of mountaineers who *descended* into the plains, first of the Panjab and Hindustan, then much later to Bengal, Orissa, Andhra, and finally to the Tamil plains in the far South East of the subcontinent.

2. The 'descent'. In discussing this point I adopt with acknowledgment and some adaptation Andronov's 'karta-schema' the schematic chart as presented in the *Jazyk braui* (Moscow, 1971, p. 13). I do not need to comment upon this adapted chart for it speaks for itself.



I do not want all to go into the question of the relation of the early Dravidian speakers and the inhabitants of the Indus Valley cities. I have expressed elsewhere[5] the opinion that the early Dravidian speakers–possibly the North-Western Dravidian tribes–might have played an important role in the obviously multiracial and possibly multilingual composition of the Harappans. I have also quite openly said that the recent Soviet and Finnish attempts at the decipherment of the script and languages of the so-called Proto-Indian civilization are not fully convincing[6] though there is intrinsically nothing against the general thesis that the language of the Harappans-or at least of some stratum of that population – might have been some kind of early Dravidian. In the light of the recent hypothesis expressed by B, and R. Allchin that the first waves of the Aryans might have entered India as early as in 2200 B. C., the problem of the Indo-Aryan invaders and their relationship to the Indus Valley civilization becomes again more intricate and complicated. However: have we necessarily to presume an inimical relationship between the Aryans and the Harappans? Why not, at least for some earlier stages, presume a kind of 'peaceful coexistence'?[7]

3. Caldwell, who was the true father of comparative Dravidian linguistics, centered his attention on Tamil as both a point of departure of his treatment, and as the Dravidian language which for him represented most faithfully the Dravidian linguistic type. Then, with the subsequent discoveries of more non-literary languages, and with a change of approach and atmosphere, the focus shifted, and Jules Bloch quite explicitely forced the view that the non-literary languages require as much attention and consideration as Tamil and the other cultivated languages if not more. This tendency reached its peak in E. H. Tuttle; however, his etymologies and reconstructions, though interesting, were mostly off the mark. Now, after all the work performed by Burrow, Emeneau, L. V. Ramaswami Aiyar and others, it is I think quite evident that ancient literary Tamil has a phonological and a grammatical system which correspond in many points rather closely with those of the parent Proto-Dravidian speech. This fact is in no contradiction with the hypothesis of the Dravidian 'descent' outlined above. On the contrary: after the other languages have 'peeled off' from the main stream of Dravidian-speaking peoples, what remained were the carriers of those linguistic features which were in many points closely akin to the linguistic characteristics of the reconstructed parent speech[8]. In this context it is interesting to note that the one spoken form of Dravidian which may be called the most 'conservative' of all spoken forms of Dravidian is Ceylonese Tamil (or rather some of its subdialects), the most peripheral spoken Tamil dialect[9], in terms of space the one which is most remote from a hypothetic centre of diffusion of Dravidian somewhere in North Eastern Iran.

FOOTNOTE

1. M. S. Andronov, *Jazyk braui*, Moscow 1971, p. 11.
2. K. K. Pillai, *A Social History of the Tamils*, Madras 1969, p 494.
3. We came to regard indigenous traditions in much more serious light than our empirico-positivistic scientific predecessors (though this empirical and positivistic view was at the roots of our own education). A word on the formulation, 'the god of the Dravidians'. Let us once have the courage to say it: to identify Tamil and Dravidian linguistically is naturally nonsense (though Tamil has preserved many an old and 'original' feature of the parent speech); the reconstructed Dravidian is obviously something *quite* different from Tamil at *any* stage of its development. On the other hand: we believe that many cultural traits of ancient Dravidians has been preserved best in the least Aryanized Indian 'great tradition'-that of the Tamils. We think that the god of the hills, the god with the spear, the Red Lord of the Seven Worlds, is one of those inherited Dravidian features preserved in the Tamil tradition.
4. On this account we stongly disagree with the views expressed by K. A. Nilakanta Sastri in his paper on Murugan read before the Archaelogical Society of South India on 22-9-1964.
5. E. g. 1961 "Dravidian Philology, General Linguistics, and Early History of India", *R. P. Sethu Pillai Comm. Vol.* Madras, 127-34; 1965 "Harappa and the Dravidians an old Mystery in a New Light", *New Orient Bimonthly 3. 65 ff.*
6. Cf. *Indo-Iranian Journal* XII, 1970, 2, 126-34, and *Language* 46, 1970, 4, 952-68.
7. For a while I played with the idea of a reverse 'ascent' of the Dravidians, from their 'original' home somewhere in Tamilnad (or in the 'submerged continent' in the Indian ocean) up through the peninsula until they would have reached Northwestern India (for THAT is a fact: Dravidian-speaking population was encountered by the Aryans as early as the Vedic period there). However, such reverse movement will not fit at all with other bits of evidence, and will not explain any of the porblems raised by the presence of Dravidian speakers in the whole of India.
8. Cf. T. Burrow in *Studies in Indian Linguistics*, 1968, p. 69: "As a general rule it seems that it is not necessary to go beyond the phonetic system of classical Tamil to account for Primitive Dravidian."
9. Not counting naturally those dialects of spoken Tamil which (unlike Ceylonese Tamil) were carried to even more 'peripheral' and remote areas by Tamil immigrants in *historical* times.

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SOME UNSOLVED PROBLEMS IN GENERATIVE PHONOLOGY

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(1)

If a theory is to be established as a new paradigm, it must transform the imagination of the professionals in the field; it should reevaluate current methodological procedures and should try to alter ultimately the concept of basic "constructs" of prevailing theories. (Constructs, here, should be understood as those non-logical terms which represent 'basic notions' of a given system and which are implicitly defined by the fundamental uninterpreted postulates of a theory). This aim can be achieved by the adherents of a competing theory in various ways. They can show that these constructs are not the valid elements of the theory in question; hence, they have no independent justification for their existence. Or, they can demonstrate that the constructs are not logically construed and formally defined and, therefore, it is not possible by any set of rules provided by that theory to relate the constructs with the various facts of observation without creating anomalous situations and producing contradictory results. This has been, infact, the primary nature of the attack by adherents of Generative Phonology on the basic constructs i. e. the phoneme, syllable, etc. of Taxonomic and Stratificational grammars. (Cf. Chomsky, (1957, 1962, 1964); Chomsky and Halle (1965, 1968), Halle (1959, 1960, 1962); Lees (1957, 1961); McCawley (1967a); Postal (1968); Schane (1968); Saumjan (1962, 1965).

However, it is quite possible that an earlier theory has constructs which are not entirely incompatible with the observable data. Some of its aspects may even be required by the new theory. Infact, no theory starts from scratch. Thus, a competing theory may broaden the concept of the constructs or it may redefine them with a different import of meaning. For example, it may provide evidence to show that it has not achieved the desired level of universality and is therefore restricted in application to a limited set of data. In order for a theory to have explanatory power atleast one of its postulate must be "more general" than the rules for the observable data being explained (Nagel, 1961).

On the other hand, a competing theory may refer to the same observable data by something significantly different. This is important because apparently identical constructs may contain different sets of values. Constructs being the nonlogical terms of basic postulates articulated by a given theory, always import meaning by virtue of occupying their defined places within the general framework of the postulates. And, as all the basic postulates of two theories are never the same, meaning and value do vary from theory to theory even if the term is used to refer to similar observable data.

A specific example of what we are referring to is provided by McCawley (1967b). He examines "the question of the extent to which a segment in Sapir's phonologic representations can be identified with a segment in the dictionary representation of a morpheme in a transformational grammar." Similarly, Chomsky uses the Jakobsonian feature system and discusses its role in the dictionary representation of morphemes, a role very different from the Jakobsonion concept of distinctive feature as a part of the general description of language and accordingly, considers these features, rather than phonemes, as an 'end point' in the network of oppositions. Nevertheless, he rejects Jakobson's notion that features of the phonological inventory should be a subset of the non-redundent features extracted from the fully specified matrix of the phonetic level. According to Chomsky, phonologic features are merely 'value' references, i. e. classificatory devices with no direct physical meanings, and thus they must be sharply differentiated from the ralative yet "concrete" features of the phonetic scale. Furthermore, Jakobsonian binary distinctive features are defining attributes of speech sounds which the listener uses as perceptual criteria for classifying speech sounds into the appropriate phoneme classes. In generative phonology, binary features are seen as the specification of 'natural classes' and are defined as universal articulatory attributes.

When a specialist-member accepts a given paradigm, he is bound to identify the paradigm in the way it is identified by other members of his group but this does not necessarily mean that he should agree on the way the paradigm has been rationalized and interpreted. Rationalization and interpretation of a paradigm is an outcome of a professional sub-speciality. Creative initiation by professional sub-specialities committed to the unified paradigm defies the monolithic concept of science. Professionals adhering to a given paradigm may employ a different set of rules for reinterpreting the assumptions without disagreeing on the nature and function of the rules. Infact, it is the function of these rules rather than rules themselves which are symptomatic of a paradigm.

It is in this way that in a recently published stimulating paper Schane (1971) has argued in favour of incorporating the term 'phoneme', a construct hitherto rejected by other generative phonologists; Diachronic and synchronic reinterpretation of certain phenomena like denasalization in French, depalatalization in Rumanian, delabialization in Romance, palatalization and labialization in Nupe, and palatalization in Japanese has led him to reintroduce the notion of phoneme, a significant unit of earlier paradigm (classical phonemics), within the generative frame work without in anyway changing the theoretical bias. Schane has tried to recapture the 'phoneme' not as a function of rules assigned by taxonomic phonemics. Infact, like other members of generative phonology, he also finds the theoretical arguments against an autonomous level of phonemic representation sound and valid. "Synchronically, a phonemic representation is not to be discovered by applying a set of procedures to a phonetic representation, nor does it exist as an autonomous level within a generative phonology; rather, it is to be characterized as a representation of relevant surface contrasts which is deducible from the function of the rules within a generative phonology" (Schane : 1971, 503).

This is all because when "paradigms change, the world itself changes......(and this does) cause scientists to see the world differently" (Kuhn, 1968 : 110). But it is incumbent upon the competing theory to prove that the changed world-view can handle problems better than its competitors.

As mentioned above, it is the feature (and not the segment) which generative phonology accepts as its ultimate construct. Adherents of this theory are unanimous in holding that distinctive feature coupled with the metatheory of simplicity metric would provide a measure to evaluate alternate phonological descriptions on the basis of what is natural linguistic process and what is not, Take the following two rules (la and lb), as discussed by Halle (1968 : 336-7).

$$\text{R. la.}\quad a \rightarrow \text{æ} \,/\, \text{—} \begin{Bmatrix} i \\ e \\ \text{æ} \end{Bmatrix}$$

$$\text{R. lb. a} \rightarrow \text{æ} \; / \; — \left\{ \begin{matrix} \text{i} \\ \text{p} \\ z \end{matrix} \right\}$$

Both the rules are indentical in their formal aspects and if phonemes are regarded as indivisible entities, both rules will have to be conceded as natural rules. With feature as an ultimate construct one is able to take the advantage of specifying/ i, e, æ/ as members of a natural class and the rule (la) as a natural rule. "The failure of the simplicity criterion in the latter case is due to the fact that the notion of natural class has no obvious meaning if phonemes are regarded as indivisible entities" (Halle, 1962 : 337). By accepting 'feature' as its basic construct, generative phonology leads one deeper to the inner mechanism of the sound system of a language than any previous model.

(2)

A competing theory is always a process in action. It develops in face of hithero unresolved problems. Some of the problems which it has to face can be pseudo – problems while others may be characterize das genuinely intricate ones. One of the pseudo – problems which has recently come up for serious discussion is the value specification of a feature; how are features to be characterized– Unary. binary or multinary ? Is it that the value specification of a feature conditioned by its occurrence on different levels of representation ?

Thus, according to Chomsky and Halle (1968:298) "The features have a phonetic function and a classification. In their phonetic function, they are scales that admit a fixed number of values, and they related to indpendently controllable aspects of the speech event or independent elements of perceptual representation. In their classificatory function they admit only two co-efficients, and they fall together with other categories that specify the idiosyncratic properties of lexical items." Those who hold this view are in favour of dividing the phonological component of a grammar into two parts-the phonological rules (P-rules) which accept the set of features with binary values and phonetic rules (McCawley's (1968:143) feature-interpretation rules (FI rules) or Postal's (1968:66-8) detail rules) which are based on the set of features with multinary values; the latter add the language specific details to the systematic phonetic representations.

Latest writings on the intrinsic content and the formal representation of feature system has revealed that the problem of value-specification for features has not yet been resolved. For example, Chafe (1970) considers that even the classificatory features, like semantic ones, are singulary in nature while, according to Ladefoged (1970), for some phonetic parameters like the vowel height, phonological features should invariably be multivalued. Both of them are critical of the way Chomsky and Halle make the evaluation procedure though both invoke the notion of natural class based on the concept of simplicity metric.

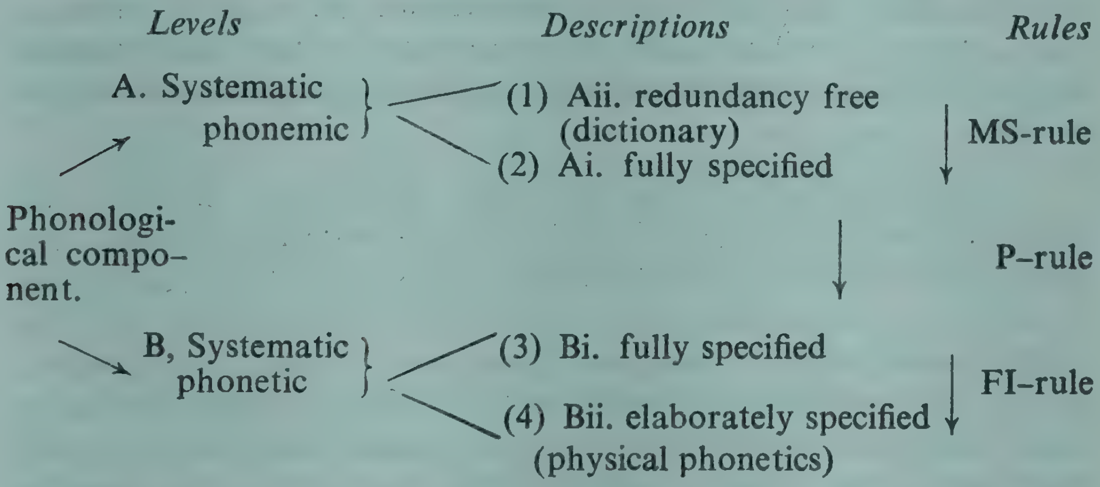
These divergent approaches within that of generative phonology is not to be taken as symptomatic of any inner conflict or contradiction of a theory itself. Infact, the situation has arisen because these linguists have failed to establish a logical and consistent relationship between theory and praxis, between theoretical constructs and mapping out these units into psychological and physical 'realities' with proper quantifications and specifications on in-between different levels.

Ladefoged (1967:58), for example, talks about three stages of sound units which a theory of phonetics must be capable of handling 1) the stage of the allocation of speech-sounds to contrasting categories. 2) the stage of the designation of relative values of each category and 3) the stage of interpretation of these values in terms of measurable units. These three stages correspond to Chomsky and Halle's (1964) three modes of description-systematic phonemics, systematic phonetics and physical phonetics respectively. But it must be born in mind that the types or modes of descriptions are not the levels of representations.

Generative phonology establishes only two levels of representations which are qualitatively distinct from each other i. e. the level of systematic phonemics and level of systematic phonetics. Units on both these levels are repesented by a fully specificied matrix. When the systematic phonemic level is subjected to its redundancy – free version one gets a less specified dictionary model of description (Stanley, 1967). Similarly when the description of a systematic phonetic level is further elaborated by giving a detailed account of specification of the degree with which a feature exists in a specific language then one gets the type of phonetic description which can be termed as the description in physical phonetics. For example, a description on the systematic phonetic level tells only whether a phonetic segment is voiced or unvoiced while the description which the physical phonetics offers has also the potentiality of telling that initial stops in one language (English) has only 15 degree of voicing. whereas the other (Hindi) has 45 and the third (French) has 60 degree of voicing.

The fact that dictionary and physical phonetic represantations are only a different mode of descriptions for systematic phonemic and phonetic levels respectively is well attested by the nature of rules which operate between the two modes of descriptions – morpheme structure (MS–) rules between dictionary and systematic phonemic representations and feature interpretation (FI–) rules between systematic phonetic and physical phonetic representations. These are not the type of rules which change the value of any given feature and thus, are distinct in function from the phonological (P–) rules which operate between the two levels of representations–systematic phonemic and phonetic; MS - and FI – rules are feature additive rules while P-rules may be characterized as feature – Switching rules.

The two levels and four modes of description related by their respective types of rules can be hierarchically ordered, as given below



As the functions, which a feature system has to discharge on the two distinct levels, are qualitatively distinct, their nature and potentiality of configuration must clearly be distinguished. Phonological and phonetic functions of a feature system though related are not to be conceived as identical in nature. "In the current literature on generative phonology, it is frequently assumed implicitly (a) that the set of phonological features used in lexical representations are rather directly reflected in the set of parameters relevant in phonetic descriptions, i. e. in nearly a one-to-one fashion, and (b) all the features are coordinate with each other, as opposed to being hierarchically organized. We are gradually disabusing overselves of these assumptions, even though the exact nature of either how phonological features are translated into phonetics, or how some features dominate others in a hierarchy and how some features group into 'super features' is a matter that is far from worked out." (Wang, 1971)

Though phonological and phonetic features are qualitatively distinct nevertheless, one should not consider that only phonetic features are substantive while phonological features are merely arbitrary categorization devoid of any content. It is true that the phonological features deal with units which are psychologically real but as psychological reality is reflective of physical reality, phonological features must be constrained in terms of the set of universal phonetic matrices.

It is important to note that phonetic features are units of systematic phonetic level and hence, like phonological features they are also relational in nature. This is the reason that "when discussing places of articulation it seems especially necessary to bear in mind that the categories are required simply for distinguishing linguistic oppositions' ' (Ladefoged 1967:22). However, apart from distinguishing linguistic oppositions, an adequate phonetic description must be capable of specifying the characteristics of a given language as opposed to other languages. It is in respect to the latter demand that we really need the eloborately specified description of physical phonetics.

The claim which I want to make here is that the two basic representations of the two levels (i. e. fully specificied phonemic and phonetic matrices) must use the feature system with the binary value as they deal either with the 'Contrasting' categories or with the 'relative' values of these categories. On the other hand, the stage of physical phonetics can use features with multinary values as it has to specify the specific characteristics of the sound categories not only relational to other sound categories of its own system but with the sound units of some other languages.

Those linguists who have not maintained this sharp distinction between the two different modes of descriptions of otherwise the same systematic phonetic level have rather confused the issue; for example, Chomsky and Halle's "The Sound Pattern of English" (SPE) is full of such misgivings. Writers of SPE have confined the phonetic function of a feature system to the physical phonetics. This is because, according to them only the phonemic function of a feature system admit two coefficients. In their phonetic function, features are invariably scales that admit a number of values related to "independently controllable aspects of the speech event." It is for this reason that we get a clumsy picture of their stress rules which have six levels of realisations. Linguists like Vanderslice and Ladefoged (1971). Wang (1971). Ohala (1970) etc have pointed out that there is no empirical evidence whereby one can correlate the six values of stress to the 'independently controllable aspects of the speech or independent elements of perceptual representation." Infact, SPE ingeniously expounds with proper justification the general theory of generative phonology but their analysis of English sound system, as Wang (1971) has rightly stated, is "based primarily on the phoneme like transcriptions of Kenyon and Knott and the pioneering studies on stress done by Newman, Smith and Trager:"

Arguing in favour of multivalued phonological features pertaining to vowel heights Ladefoged (197 : 28) has recently remarked – "Any one who accepts the notion that different levels of stress can be specified in phonological rules surely should have no difficulty in accepting the notion of vowel height as a multivalued feature." But surprisingly enough in a paper written in joint authorship with Vanderslice, he (1971 : 22), proposes a set of six binary features for the suprasegmentals – (1) Strong (2) Accent (3) Intonation (4) Cadence (5) Englide and (6) Emphasis which "accounts for English accentual and intonational distinctions in an intuitively satisfying view". In conclusion they assert "that our features fit naturally and harmoniously into the stress cycle of the Sound Pattern of English." One may also say that anyone who is in favour of proving the validity of binary features for suprasegmentals should have no difficulty in accepting the notion of binary coefficients for vowel hieghts.

Infact the cause for uneconomic and complicated phonological rules rests not in the binary value of feature system but it lies in the unmotivated and empirically unjustified choice of the feature specification. For example, Ladefoged's four possible values of a vowel height can be captured provided we accept Wang's (1968) proposed binary features with which he is able to provide on alternative solution to the English vowel shift which is economical and no more complicated,

Let us take the specifications of Chomsky and Halle's (1968 : 304–8) proposed features like High, Low and Back for which SPE expands a detailed justification. These features are "basically revised versions" of Jakobsonian 'diffuseness', 'compactness' and "gravity". The motivation for this modification is to extend the application of these features to wider range of and also to account for certains phonetic facts of different language in a more generalized yet unambiguous way : i. e, these revised features, apart from taking care of all the phonetic facts covered by Jakobsonian features, explain also the phenomena of palatalization, valarization and pharyngealization in a more systematic way. Furthermore. these "features specifying the position of the body of the tongue are now the same for vowels and consonants."

It would be interestng to see how these features configurate in the P-rules dealing with cases of assimilation. In SPE we find three P-rules related with the three sets of consonants, as given below:

*set I $[\overset{+}{k};\ \overset{+}{g}] \rightarrow [c;j]$	Velar softening rule. R II
Set II [t, c; d] → [s; z]	Spirantization rule. R III
Set III [t; d; s; z] → [c, j, s, z]	Palatalization rule. R IV

It seems that three sets have been organized in SPE on the basis of phonetic similarities rather than on the identity of phonetic processes. Is it not that the part of the velar softening rule (RIIa) is a case of palatalization ?

R II a $\overset{+}{g} \rightarrow j\ /\!-\! \begin{Bmatrix} i \\ e \end{Bmatrix}$

If yes, then why is this part of the rule not put with the more gereralized rule of palatalization i. e. R III ? These three sets can be re-set on the basis of the assimilatory processes which are more explanatory in nature.

Set A	$[\overset{+}{K} \rightarrow [C]$	R. IIb.
Set B	[t, c; d] → [s; z]	R III b.
Set C	$[t, d, \overset{+}{g}; s; z] \rightarrow [c, j, s, z]$	R IV b.

For this re-set, the velar softening and palatalization rules will be like R IIb and RIVb and not as R II and RIV of SPE.

$$\text{R II} \quad \begin{bmatrix} -\text{cont} \\ -\text{ant} \\ +\text{deriv} \\ < -\text{voice} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{cor} \\ +\text{strid} \\ < +\text{ant} \end{bmatrix} \Big/ - \begin{bmatrix} -\text{back} \\ -\text{low} \\ -\text{cons} \end{bmatrix}$$

$$\text{R II b.} \quad \begin{bmatrix} -\text{cont} \\ -\text{ant} \\ -\text{voice} \\ +\text{deriv} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{cor} \\ +\text{strid} \\ +\text{ant} \end{bmatrix} \Big/ - \begin{bmatrix} -\text{back} \\ -\text{low} \\ -\text{cons} \end{bmatrix}$$

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*$/\overset{+}{k}, \overset{+}{g}/$ belong to the derivable category of velar stops contrasting with /k, g/.
/c/ is the dental affricate.

$$\text{R. IV} \quad \begin{vmatrix} -\text{son} \\ +\text{cor} \\ \end{vmatrix} \rightarrow \begin{vmatrix} -\text{ant} \\ +\text{strid} \\ \end{vmatrix} \; / \text{—} \; \begin{vmatrix} -\text{back} \\ -\text{voc} \\ -\text{cons} \end{vmatrix} \begin{vmatrix} -\text{cons} \\ -\text{stress} \\ \end{vmatrix}$$

$$\text{R. IV b.} \quad \begin{vmatrix} -\text{son} \\ \propto \text{aat} \\ \propto \text{cor} \end{vmatrix} \rightarrow \begin{vmatrix} -\text{ant} \\ +\text{strid} \\ \end{vmatrix} \; / \text{—} \; \begin{vmatrix} -\text{back} \\ -\text{voc} \\ -\text{cons} \end{vmatrix} \begin{vmatrix} -\text{cons} \\ -\text{stress} \\ \end{vmatrix}$$

A palatlized consonant is invariably a [+high] segment but neither the actualized segment nor the determining context is characterized by this feature. Vowels which are [−back, −low] R II. or [−back] R IV. have been shown in SPE to assimilate [−ant] to [+ant] or [+ant] to [−ant]: How can a [−low] vowel switch the value of [+high] to [−high] and how can the feature [+back] assimilate [+ant] to [+ant] in one part, and [−ant] to [+ant], in another part of the same rule. This clearly shows that the classificatory scheme of distinctive features in SPE is far from being consistent and internally cohrent.

We find palatalization and libialization as cases of assimilatory processes in many languages. Hyman (1970) discusses the two rules for Nupe (a Kwa language of Central Nigeria).

$$\text{R. V. } \mathrm{C} \rightarrow \mathrm{C}^{w} / \text{—} \left\{ \begin{matrix} \text{u} \\ \text{o} \\ \text{ɔ} \end{matrix} \right\}; \quad +[\text{cons}] \rightarrow \begin{bmatrix} +\text{round} \\ +\text{high} \end{bmatrix} / \text{—} \begin{bmatrix} +\text{round} \\ \text{V} \end{bmatrix}$$

$$\text{R. VI. } \mathrm{C} \rightarrow \mathrm{C}^{y} / \text{—} \left\{ \begin{matrix} \text{i} \\ \text{e} \\ \text{ɛ} \end{matrix} \right\}; \quad [+\text{cons}] \rightarrow \begin{bmatrix} -\text{back} \\ +\text{high} \end{bmatrix} / \text{—} \begin{bmatrix} -\text{back} \\ \text{V} \end{bmatrix}$$

It is counter intuitive to think that features like [+round] and [−back] can be a condition for switching the values of a feature for a consonant to [+high]. Furthermore, Hyman's presentation of two rules do not capture a significant fact of generalization that the two superficially distinct processes are the result of the same change with opposite values of features - backness and roundness. Fante dialect of Akan language also attests the cases of palatalization where labials, dentals and velars get palatalized before i. e. (Schachter and Fromkin, 1968). The incompatibility of SPE's feature system for the rules for this dialect has been revealed by Fromkin (1968).

It is important to understand the reason of the failure of SPE's feature system in revealing the true nature of assimilary processes, for it will be equally applicable in other cases. From an articulatory point of view, vowels which are [−back] fall under the palatal region and [+back] under the velar region. The difference between palatal consonants and [−back] vowels or back vowels and [+back] consanants lies not in the place of articulation but in the degree of constriction. Thus, if vowels like i. e, ɛ have to form a natural class with c. ɟ. ç, j, they must invoke the feature [palatal] instead of the feature [high].

Contreas (1969) has recently argued that the binary value of a feature conflicts with the simplicity criteria in the sense that rules which are intuitively more general are not consistently simpler than less general rules. But I find Contreas' objection more against Halle's simplicity criteria which is mechanical in procedure than against the binary value of a feature system as such.

According to Halle (1969) it is the simplicity measure which defines the notion of 'natural class' "We shall say that a set of speech sounds forms a *natural class* if fewer features are required to designate the class than to designate any individual sound in the class." If we have to capture the linguistically significant generalizations we have to reverse this process i. e. we have to condition and define the notion of simplicity by the naturalness conditions. Otherwise, we find the classes of vowels having feature complexes [∝ back, ∝ round] i. e. i, e, c, u, o, ɛ, and [∝ low, ∝ round], i. e i, e, t′, æ, ə which have the same number of features, nevertheless, which cannot be said to be equally natural. Similarly a class having a feature complex [∝ vocalic, ∝ high] is simpler than the previously mentioned two classes on the basis of Halle's mechanical procedure of feature counting but intuitively it appears to be far less a natural class.*

I have elsewhere stated (Srivastava, 1970 : 187 - 8) that the terms 'simple' does not mean simply 'elegant' and 'beautiful' and the notion simplicity measure, in no sense, invokes the method of Halle's mechanical procedure. A logically simpler statement may not always be mathematically simpler. Following Popper (1965) I mean by simple rules those rules "which tell us more, which have greater empirical content and which have a higher degree of falsifiability". By the term natural rule, I mean those rules which have a greater degree of probability and of law like regularity within and a cross languages. One may thus, assert that it is the content of features coupled with the notion of simplicity that decides the question of naturalness.

A theory may evolve a filtering device through which the intrinsic content of its constructs is filtered through as to reveal 'natural' or 'expected' cases from others which are 'unnatural' and 'unexpected'. This filtering device can be only a part of a *model* for the interpretations of a grammar. The *markedness* principle is a part of a model constructed by generative phonology and this, serves as the element of the filtering device; it is infact, a set of conventions for the interpretation of a grammar in a more natural way. What I want to claim here is that we get singulary features only when binary features are filtered through the Marking Conventions.

Supporters of singulary features have obviously lost sight of the sharp contrast between the feature specification for a grammar of a given language and the filtered value of these specifications coming out of the theory of a grammar. For instance, Chafe (1970) also talks of marked and unmarked value of a feature correlating it with the concept of "cost" which is "the amount of physiological energy expended in the production of a phonetic feature". He states- "Now, it might at first seem enough to say that any segment which is glottalized or nasal is marked in that respect, while the one that is not is unmarked. Glottalization and nasality could then be regarded as singulary, not binary features, either present or absent in a particular case. It costs something to have them there; a segment without them costs less, all else being equal. The same demand is achieved through marking conventions with a difference that these conventions have a powerful in-built apparatus for marking a segment with its least costly 'U' or more costly 'M' and, at the same time, have the potentiality of converting U's and M's into the binary value for that feature.

The assignment of Marked or Unamarked status to a feature is based on the hypothesis which suggests that certain values for features universally cost more than others; a less costly value is more frequent, appears invariably in a position of neutralisation, is acquired earlier in language learning and is lost later in aphasic conditions and has increased power of change-resistence in the course of language development. Significance of marking conventions lies also in eliminating many MS-rules because "in the new theory neutralization will be treated by U markings in the dictionary and these will be converted to the 'normal' values by completely universal rules. If 'normal' values are actually those occurring, nothing more need be said in particular grammars (Postal, 1968:172).

At present, generative phonology is faced with a true problem of finding out the explanations why any particular sound is more or less highly valued. This area is anticipating further investigation. The required explanation can be offered only after we substantiate a feature system with its 'intrinsic' content. To fulfill this demand, a tentative set of marking conventions have been proposed in SPE but that is far from being satisfactory on various accounts.

Some of the problems which promise further research are (i) It is not clear, for example, whether the intrinsic content of a feature is determined by the articulatory, acoustic or perceptual phenomena or it is a result of combination of various factors ? In order to understand the naturalness of common phonological processes, features must be defined with respect to their 'instrinsic' content. But the difficulty lies in the fact that "ease of production, the relative frequency of sounds, early acquisition etc, fail to give any formal characterization of why any particular sound is more highly or less highly valued and that relative frequency does not constitute an explanation for the relative frequency" (Lightner, 1965).

(2) If we accept a model common to both articulation and perception we have to take into account the reality of minimal units for the different stages of production and perception. Based on the experimental findings and logical deductions made by Kozhevnikov and Chistovich (1965), I accept at the very outset that the minimal unit of programming is 'syntagm' (-a semantic unit which is a sentence or part of a sentence articulated at one output), the unit of articulation is 'syllable', the unit for recognition is 'phoneme' and the unit for discrimination is 'feature'. (Srivastava 1979a). It is pertinent to ask a question, is the 'intrinsic' content free from the influences of units of other stages ? . If not, then we are not clear how to integrate the various influencing factors in a composite whole ?

Even for features like a 'syllabicity' we have no articulatory or acousitic correlate which could determine the intrinsic content of this feature, nevertheless, there is enough empirical evidence in favour of its existence. By not accepting 'syllabicity' as a feature, SPE has denied the entry of a unit of psychological reality for native speakers of all languages are intuitively aware of how many syllables there are in their articulated speech.

(3) Jakobson (1968 : 64) has talked about a sequence of common laws of solidarity attested universally by the development of child language, the dissolution of aphasic language, and the synchrony and the diachrony of the language etc. We are unable to know as to what should be the decisive factor in determing the intrinsic content of a feature in a situation where the law of solidarity succumbs to conflicting criteria.

We are told about the predominance of the Vowel / a / because it emerges as the first optimally simple vowel. This gives it a status of unmarked. But the vowel reduction rule of SPE or stratificational analysis of Bulgarian vowel system (Lockwood, 1969) results in the fact that the Schwa [ə] is the most unmarked vowel. Are we, like Lockwood, to say that Markedness is not necessarily universal "but rather a matter which is to be decided individually for each language " If we accept the Markedness conventions as universal and vowel reduction as a language specific instances then, infact, we make the M–V criteria devoid of any intrinsic content because "many investigations suggest that the schwa-like vowel shows less displacement of the articulators." (Fromkin, 1963 : 165).

Furthermore, in SPE we find [e] as a 'neutral state vowel' and features like High and low are consequently defined in reference to the tongue posture for this vowel. But one is at a loss to know why [e] is considered to be a 'neutral state vowel' when [a] is accepted as the most basic and optional vowel ?

(4) Markedness convention of SPE is a mass of varied and incongruous rules. One can easily discern three different types of rules - 1) formal 2) intrinsic and 3) linking. Rules of the type R. VII, and VIII are merely definitional which reveal nothing. Intrinsic rules like R, LX change all the M and U specifications in the lexicon to ± and – values in a more expected and natural way. Linking rule of the type B, X change the subordinate features (voicing) after the rule has changed the value of a feature sonorant which dominates it.

R. VII [+low] → [−high]
R. VIII [+high] → [−low]
R. IX [u nasal] → [−nasal]
R. X [u voice] → [+voice] / [+nas]

As evident from the linking rule of the type R. X, a change in unvoiced consonant to a marked feature [nasal], entails in a natural way switching of value for the feature [voice]. This establishes a concept of feature hierarchy i. e. [nasal] is more dominant a feature than [voicing].

Obviously, SPE has not antincipated that features may be of coordinate type also. Let us take some marking conventions for vowels, as stated in rules XIa, b and XII a, b.

R. XIa. [u back] → [∝ back] / [∝ round]
b [m back] → [-back] / [+round]

R. XIIa [u round] → [∝ round] / [∝ back]
b [m round] → [–back] / [+round]

According to this convention /i/ can be represented as (a) [–round, U back] or (b) [U round, –back]. Want (1971) is right in commenting that in such cases "either representation yeilds the right result, but there is no non-arbitory way of choosing between them. Such indeterminancy in the theory is clearly undesirable."

(5) It is beyond doubt that a convention based on the notion of "cost" where cost is correlated with the amount of physiological energy expended in the articulation of a feature, will depend upon the context. SPE conventions have not shown that a context determines when a feature is marked and when it is unmarked. For example, a nasal in the context V-C will be always unmarked if it is homorganic to the following consonant. Similiarly, a non-sonorant speech-sound in the intervocalic position will defy the SPE's convention (R. XIII) and yet be unamarked.

R. XIII. [u voice] → [–voice] / [son]

(6) Another interesting field of investigation is to find out the quantum of influence an environment exerts on the 'intrinsic' content of a feature for a given segment. A number of experiments in experimental phonetics (Lindbolm, 1963; Ohman, 1964) suggest that it is possible to quantify the extent to which a substantive property of a segment is changed because of the influence of the adjoining speech sounds. Ohman (1967) has even offered a mathematical formula which does handle most of the variables of assimilatory processes.

The problem is how to incorporate these recent findings in the marking conventions. Phonetician like Ohala goes even to the extent of saying that "we can either give up or try to represent all these assimilatory changes by the one general rule or we can adopt a new system for representing these processes. Let us abondon the Chomsky and Halle feature system for the representation of this process infact, let us abondon features."

Nodoubt, that the problem of weightage assignment to given feature concomitant with some other dominating or subordinate features has not yet been explored properly. But this does not mean that the feature system has no potentiality of carrying over this demand.

Some interesting observations have been made by Chen (1971) as regards to the palatalization and nasalization processes. His survey and analysis of over 600 Chinese dialects shows that "if palatalization occurs at all, the process hits the velar nasal first, then the dentals;

the labial nasals are the last of the initials to undergo palatalization. This observation can be generalized : palatalization spreads from the back to the front series, regardless of nasality. voicing, aspiration and the features." And further, "The process of nasalization progress is clearly from low to high and front to back vowels...... The direction along with denasalization progress is just the opposite that of its reverse process of nasalization."

Problems like the above have induced recent work in generative phonology to find their right answers. At times one finds that answers offered so far are no answers and contributions of this theory still hang over major unresolved issues. But one must not loose sight of the fact that a competing theory always embibes its life - source from hither to unresolved problems and develops by asking even those genuine questions for which it has no ready - made solutions It is in no sense disheartening to find the limitations of its own model and be aware of them for changing and reshaping. That is why the writers of SPE have stated in their preface— ' No system of rules that we have proposed has survived a course of lectures unchanged, and we donot doubt that the same fate awaits the grammatical sketch that we develope here" (1968, X).

Without realising the real significance and contributions of a theory, one may even go to the extent of stating that "in the history of linguistics, the theory of markedness will go down as the most adhoc of all adhoc measures proposed in the field" (Ohala, 1971). At the same time, one has also to accept that the problems related to the "intrinsic content of features", though still to a certain extent unresolved problems, nevertheless, are genuine problems which break the stultifying areas of investigation. Nodoubt, "Chomsky and Halle have probably contributed as much to the progress of linguistics by the wrong answers which they present in SPE as by the right answers" (McCawley, MS) because of the fact that in SPE they are bold enough to face certain genuine yet unresolved problems in phonology.

Furthermore, an important claim involved in such unresolved problems should be stressed. It is also an important fact of a theory that the total concept of any given theory is not limited to its "constructs", Nagel (1961:91), apart from the abstract calculas which is fundnmental to any theory and which implicity defines these constructs, points out two more components, for a scientific theory, i. e. a set of operational rules which "assign an empirical content to the abstract calculas" and "a model for the abstract calculus". Generative phonology must hot be viewed as a shaky or wavering theory because of its wrong answers as most of the unresolved problems hinge over the later two constituent parts of a theory-i.e. the part which either evolves a leak-proof apparatus for formalizing the operational rules or which construes a faithful model for its abstract calculas. Problems related to the value specification to its basic constructs like feature system which pertain to the area of its fundamental postulates, as discussed above, are merely pseudo-problems.

FOOTNOTES

* It is surprising that though authors of SPE are aware of these facts and they are theoretically in favour of defining 'natural class' on the basis of intrinsic content of features, throughout, in their rule formulations for English, make use only of formal properties of features and feature specifications.

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(The next issue of ijdl with carry comments of experts on this article and the reply of Srivastva)

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A COMMENT ON LEXICAL INSERTION

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1. Introductory remarks

In working with the generative phonology of a highly inflectional or derivational language[1] one repeatedly faces the problem how to distinguish processes that are genuinely phonological (synchro nically speaking) from what is more appropriately considered "morphological alternation", suppletion, and the like. Now, any attempt to define the limits of morphology involves a hypothesis about the nature of lexical items, including their representation in terms of phonologically specified idiosyncracies and non - phonological idiosyncracies. It goes without saying that it is difficult to discuss these matters in a meaningful way unless we know where the lexical items come from, and at which point in grammar lexical insertion takes place. Thus it is that contemporary work in syntax *and* in phonology has to face one and the same crucial problem : how does "lexicon" fit into a transformational grammar ?

The reflexions of which some elements are presented below, where provoked as conceptual prerequisites by research on the interrelationship between morphology and phonology in languages exhibiting a high degree of morphophonemic complexity (viz. Danish and West Greenlandic Eskimo). However, the questions of lexical insertion on which the present paper concentrates, are of a very general nature, and the subject - matter has indeed received a good deal of attention in the last few years. The disscussion of suppletion and of idioms in the present paper is very closely related to recent contributions by generative grammarians writing in English and (predominantly) about English. I have found it expedient to take some ot their most often - cited examples as my point of departure (rather than finding equivalent examples in other languages), even though my intuition about this English material is anything but sufficient.

I make no attempt in this paper to survey the theories about word formation, and the vast literature dealing with these matters. The exposition focusses on the question : *how late* in syntax does lexical insertion occur ? On the basis of morphological evidence it is suggested that the insertion of phonological representations occurs *post - cyclically,* but that the insertion process is preceded by semantic transformations which take care of the generation of synonyms of different complexity, syntactically well - formed metaphors (cf. Chafe 1968), and the like.

2. The introduction of lexical items in grammar

2.1. Deep versus late insertion

According to the now classic theory of transformational grammar (Chomsky 1965, further developed in Chomsky 1970) the base component of grammar produces strings of constituents which are then subject to lexical insertion and thereby acquire a phonological specification. The syntactic transformations operate on these items, and in the course of these processes other phonological specifications may be introduced. That is, lexical insertion takes place essentially *before the transformational component* of grammar, but some of the transformations require additional insertion processes. This conception of grammar shares with American structuralist tradition a strong emphasis on lexical primes : "morphemes" or "formatives", which forces the linguist to operate with spurious "phonological" processes in order to derive suppletive forms from these primes. It is thus contended that it is unnatural for languages to have "portmanteau morphs" and the like. This seems controversial in view of the fact that we find numerous instances (outside inflectional morphology) where a lexical entry incorporates the content of another entry without being phonologically related to it.

It is immediately more promising for morphology if a major part of syntax is assumed to be pre-lexical (in European structuralist terminology : concerned with content rather than expression). However, as I shall demonstrate below this depends entirely on whether lexical insertion is *cyclic* or *post – cyclic.*

According to the theory of generative semantics syntactic rules operate on an underlying semantic structure. There is, according to this theory, a whole hierarchy of sentences underlying a surface sentence like *John killed Bill,* the surface verb *kill* being derived - by successive applications of a cyclical rule called PREDICATE RAISING or PREDICATE LIFTING - from such predicates as CAUSE, BECOME, NOT, and ALIVE[2] . This rule lifts the verb of the lowest sentence, i.e. BE ALIVE, to the next sentence, so that the lifted verb come to stand adjacent to NOT, and on the next cycle it lifted the whole verb complex to the sentence above it, so that it comes to stand adjacent to BECOME of higher sentence. By lexical insertion at this point we get *die* (BECOME NOT ALIVE). If, however, the rule applies once more, the verb resulting from earlier applications is lifted to the highest sentence so that it comes to stand adjacent to CAUSE, and by lexical insertion we get *kill* (CAUSE BECOME NOT ALIVE).

It is implied by this analysis that there is not necessarily any syntactic difference between the derivational relationship of *kill* to *die* and the derivational relationship of, say, *break* in *he broke the glass* to *break* in *the glass broke*. The verb *die*, in turn, may be considered a kind of inchoative formation from a stative predicate whose descriptive content is reflected by the surface adjective *dead*. According to this kind of interpretation (cp. 2.3.) the derivational relationship of *die* to *dead* corresponds to that of *darken* to *dark*, etc. In each case there is a difference between arbitrary substitution of lexical material *(die - kill, dead - die)* and a generalized type of derivation *(break - break, dark - darken)*, but this reduces to mere morphological irregularity : *die - kill* is nothing but an instance of suppletion, if we wish to formulate the relationship within the framework of derivational morphology.

The analysis of *kill* which I have sketchily referred to above, implies that lexical insertion must occur after cyclical rules like PREDICATE RAISING. On the other hand, it has been claimed that lexical insertion occurs before certain post - cyclic movement transformations, since these may depend on specific lexical items (I shall revert to this kind of argument later).

2.2 Cyclic versus non - cyclic insertion of lexical items

It may be assumed that lexical insertion takes place *either* least in the transformational cycle *or* at the very beginning of the post-cyclic rules.[3] As far as I can see the latter solution must mean that a form like *kill* directly replaces a lexical entry containing the semantic material CAUSE, BECOME, NOT, BE ALIVE in some configuration, after it has been brought together by PREDICATE RAISING. There is no derivational connection between the phonological shapes of the lexical items *die* and *kill*, though the lexical entries for these items share semantic material.

The situation is quite different if lexical insertion is cyclic. The lexical item *die* should, according to that conception, be inserted on some cycle, and on the next cycle PREDICATE RAISING applies to this items in its phonological form so that the higher sentence comes to contain a complex consisting of CAUSE and *die*. When lexical insertion applies again this hybrid configuration is taken as a lexical entry, and the item *kill* emerges. Lexical items like *die* and *kill* are thus very directly connected since the causative from is transformationally derived from the phonological representation of the verb *die*.

It is clear that lexical insertion is ordered in some way if the phonological representation of an entry can condition the representation of a more complex entry of which it is a constituent.

Lakoff (1970 p. 78 - 79) refers to the *come* - *bring* situation as evidence in favour of the hypothesis of lexical decomposition : "The ordinary sense of "come" is related to the ordinary sense of "bring" by a predicate of direct causation (...) In addition, there are many idiomatic expressions containing the phonological form *comes*, whose corresponding causative has the phonological form *bring* (...) There are enough of such cases to require that a rule be stated relating the cases with "come" and the cases with "bring" (though there will, of course, be exceptions to any such rule). In the lexical decomposition framework, the rule of predicate - lifting will create complex predicates such as "CAUSE - *come*". The regularity is that "bring" substitutes for such a complex predicate".

Phenomena like this one do not prove that insertion is cyclic. However, the relationship between *come* and *bring* is most easily accounted for if we assume some kind of ordering so that various readings of *come* are first replaced by a common representation, after which the causative *brink* is derived by a lexical rule (which is more or less insensitive to the derivational history of *come*). The cyclic interpretation of lexical insertion sketched above is one approach to this kind of solution.

There are other types of evidence bearing upon the question, but we shall leave this aside here.

2.3. Is cyclicality of lexical insertion phonologically plausible ?

According to the cyclicality hypothesis a morphologically indivisible chunk like *bring* is inserted in two steps first the form *come* is specified in its phonological she (i. e. specified to the same extent as in those contexts where it appears as a surface verb), and afterwards the form *bring* is derived from the form *come* plus the element

CAUSATIVE. This conception of the process seems to me inescapable if lexical insertion is to be cyclic.

There can hardly be any formal objection against the postulation of transformations that takes some phonological material plus some semantic material and replaces it all by some totally new phonological material. But it is not a particularly convincing hypothesis about what normally goes on in language. It seems awkward to introduce phonological feature matrices in syntax with the sole purpose of having a set of such matrices trigger the insertion of a new set of totally unrelated feature matrices.

This is an entirely general problem concerning suppletive morphology. In what sense can e. g. the phonologically specified stem *be* be said to "underlie" forms *am, is, was ?* I find it questionable whether the analysis of competence can be correlated with a reasonable model of performance if we claim that non - productive, more or less atomic formations like *bring* or *was* take more derivational machinery than regular formations like (causative) *break* or (pret.) *drown+ed*. It would indeed be inexplicable why some of the most central words in language should be represented by forms exhibiting the longest paths of derivation. - It seems intuitively more satisfactory to assume that the aforementioned idiosyncratic forms are costly only in terms of lexical *representation.* It would not matter if they took a good deal of "space" in lexicon since these very forms are highly frequently used items. I shall revert to this crux of morphology in section 3.1. below.

As for the relationship between specifically *come - bring* and *die - kill* it seems reasonable to assume that *bring* is equivalent to *come* plus the element of CAUSATIVE; the parallelism of *die - kill* is less convincing, but it is possible to see the connection. As mentioned earlier in this paper the relationship between *bring* and *come* can be considered as suppletion, since we have numerous cases where a causative verb and the non - causative structure from which it is derived, turn up as identical surface verbs : *break, turn*, etc. In other cases the structure from which the causative is derived turns up as a surface adjective, cf, *dry, clean* (or it appears both as surface verb and adjective with more or less identical phonological specifications, cf. *fit*). It is obviously a lexical rule of English that causative verbs can be derived with no phonological change from structures that occur as non - causative verbs or adjectives (the derivation *come* → *bring*, and the blocking of causative **come*, must be stated as an idiosyncracy, but that poses no problem in the cyclic framework). Now, why is *kill* derived from *die* rather than from (*be*) *dead* (if it is at all derived from any of these) ? The above derivation involves a postulate : causative verbs are derived from non - stative rather than stative predicates (cf. the derivation of *bring* from COME rather than from BE THERE, or the like). If we follow this principle, the transitive i. e. causative, verb *clean* is not directly derived from a stative predicate corresponding to the adjective *clean*, but it is derived from an intermediate derivation which means something like BECOME CLEAN.

How should lexical insertion be imagined if there is no surface item reflecting such intermediate derivations ?[4] In the case of *clean* from CAUSE TO BECOME CLEAN the obvious solution is to insert an intermediate form which is later blocked if no further derivation occurs : (i) lexical insertion provides the entry BE CLEAN with a phonological form : *clean*, (ii) predicate raising applies, and lexical insertion for BECOME + *clean* gives an unaltered phonological specification ("zero" derivation), (iii) predicate raising applies again, and lexical insertion for CAUSE + *clean* gives an unaltered phonological specification ("zero" derivation once more). Output constraints block the lexical output *clean* in the stative sense unless it appears as an adjective, and they also block this output in the incohative, "medial" sense, whereas the output is permitted in the causative sense. This solution presupposes *either* that lexical output constraints are global rules ("remembering" the derivation) *or* that there is a diacritic marking of lexical items indicating what these are derived from, in order to distinguish permitted and non - permitted uses of *clean*.

The approach outlined above provides us with a very powerful tool, and it must be seriously asked whether it is not too powerful. In the case of *kill*, what prevents us from positing a "zero" derivation from an item **kill* that is more or less synonymous with die ? Similarly, instead of deriving *bring* from *come*, we might claim that come has a near synonym **bring*, which, however, is used only if causative derivation has applied to it. This would mean that lexical insertion in the case of COME may either give *come* or **bring* (possibly as an optional choice in some cases but not in others) and that lexical output conditions block the causative derivation if the string containing the form *come*, whereas they require this very derivation if the string contains the form *bring*. The obvious advantage of this kind of solution is that a phonological specification of the verb stem occurs only once in the above - mentioned set of derivations, and that the form of lexical entries becomes easier to state.

On the other hand, if we give up the idea that lexical insertion of *bring* involves the phonological specification of *come*, we do not really capture the regularity mentioned earlier, viz. that a great many expressions with *come* also occur with causative *bring*. It is interesting whether a generalization to this effect can be made *without* involving lexical transformations like come → bring. I shall attempt to approach this problem by considering the place of "idioms" in generative in grammar.

3. The identity of lexical entries

3.1. Are idiomatic expressions lexical items ?

In a grammar with a deep structure idiomatic[5] expressions like

to kick the bucket (i. e. 'to die')
to pull someone's leg
to go west (quoted as British army slang 'to die') can be generated like other grammatical strings, and their specific use as metaphore becomes a matter of semantic interpretation (cf. the interesting discussion of "meaning rules" in Kiparsky 1970 p. 277).

In a generative semantic theory of syntax, on the other hand. the underlying structures of such expressions must reflect their metaphorical sense. It may, therefore, be assumed that the lexical entries for *kick the bucket* or *go west* are essentially similar to that for *die*, and that the lexical entry for *pull someone's leg* at least shares some properties with that for *fool*. If that is true, there may be no connection between the constituent structure of the string to which lexical insertion applies and the apparent surface structure of the output. A string like *kick the bucket* will be a lexical item just like the stem die.

It is, however, obvious that idioms like the above are not "morphemes". As pointed out by Chafe (1968), and others, it is true of metaphors like *kick the bucket* that they are often perfectly well - formed syntactic strings, and that they may undergo inflection of their constituents as well as certain other modifications. A sentence like

he kicked the bucket

is formed by inserting the past tense affix - *ed* inside the string *kick the bucket*, i. e. if the latter is a lexical item there must be a transformation applying after the insertion of the idiom with the effect :

he [kick the bucket] - ed → he kicked the bucket

This can be accounted for in a decently simple fashion if the idiom chunk has a lexical phrase marker associated with it, so that *kick* is marked as a verb and *the bucket* as a noun phrase. Similarly, the sentence

he pulled Tom's leg

contains an idiom whose invariant part is *pull...'s leg*, with an associated marking of phrase structure so that the tense affix and the object noun can be put into their proper places by transformation with the combined effect :

he [pull ...'s leg] –ed Tom → he pulled Tom's leg However, morphological idiosyncracies complicate the matter. Compare the sentences :

he pulled my leg
he went west

As regards "portmanteau morphs" like *my* and *went*, there are two reasonable hypotheses : (i) that they are derived by a morphological process after insertion of the "stem"; (ii) that they are inserted directly as lexical items.

(i) If we assume that forms like *my, went* are produced in a separate, late subcomponent, i. e. *morphology*, we may set up derivations like

he [pull ...'s leg] –ed me → he pulled me's leg
→ he pulled my leg
he [go west] –ed → he go–ed west → he went west

However, if we derive *my* from *me+s, went* from *go+ed*, we are back in the problem of *come - bring* : it is unsatisfactory to introduce a phonologically specified item with the sole purpose of replacing it by something else. An alternative conception of the relationship between lexicon and morphology is that lexical insertion rules generate sets of truly synonymous alternants such as

$$\text{GO} \rightarrow \left\{ \begin{array}{c} \textit{go} \\ \textit{*wend} \\ \text{(etc.)} \end{array} \right\} \qquad \text{PAST TENSE} \rightarrow \left\{ \begin{array}{l} \textit{–ed} \\ \textit{–t} \\ \text{(etc.)} \end{array} \right\}$$

whose members may combine with each other to produce forms like *goes=*wends, *goed went*, etc., whereas morphology comprises a set of conditions on such forms, i. e. functions as a filter that blocks unpermitted forms. The problem with this latter conception is as mentioned in section 2.3. above, that it is too powerful a device in grammar theory. In fact, the linguist is in danger of being involved in a jungle of ad hoc decisions such as a choice between **wend* (cf. *send)* or **wean* (i. e. wēn, cf. *mean*) as the underlying "stem" of *went*.

(ii) As suggested in section 2.3. we may instead take "portmanteau morphs" as items of the lexicon, so that much of what is traditionally called "morphology" comes under lexical insertion proper. This means that there are semantically represented entries such as

GO + PAST
I + POSS.

and that lexical insertion, when applying to these complexes, produces the items *went* and *my* directly.

A general evaluation of the relative merits of "morphological" and "lexical" approaches to the specification of such idiosyncracies as suppleting alternants cannot be undertaken in this paper.[6] If, however, the latter approach is considered from the point of view of idiomatic phrases it has obvious shortcomings within the framework of the current generative semantic conception of lexical insertion. Consider the literal and metaphorical readings of the sentence *he went west*. On the literal readings *went* would be inserted directly as a lexical item, but what about the metaphor *went west?* If we set up *go west* and *went west* as separate lexical items, we burden the lexicon with an enormous lot of items. If, on the other hand, we have just one lexical item for the metaphorical expression, we shall have to derive irregular forms anyway *after* postlexical transformations.

This would fail to capture the important generalization that the pattern *go-went* in the idiom is the same as the inflection of the verb *go* in its ordinary sense.

This situation is unacceptable. Lexical insertion must treat the verb *go* in such idioms as *go west*, *go to hell,* etc. as the same item as the ordinary verb *go*, otherwise we shall have to state the same morphological facts several times though there can be no reasonable doubt that *go* in the different uses is mastered as the "same" verb by speakers of English[7]. It is misleading to treat such occurrences of a verb in different idiomatic expressions as "homonymy" *on a par* with, say, the homonymy between *race* meaning 'species' and *race* meaning a kind of contest, but this is exactly what we should be forced to do.

3.2. "Idiom" formation

The evidence considered above suggests that "idioms" may not be a matter of lexical insertion only. This idiom *go west* contains the verb *go*, which is a lexical item, and the adverb *west*, which also is a lexical item. There is nothing lexically strange what so ever about this phrase, and that is exactly what conditions its effect as a metaphor (unconventional reference, cf. Reddy (1969). Though the real nature of mataphor formation is enigmatic, I see no fatal consequence of the working hypothesis that the ambiguity of *go west*, *kick the bucket*, etc. is established "before" the insertion of phonologically specified lexical items takes place. I thus fundamentally agree with Chafe (1968) in assuming that there is a subset of pre - lexical rules in syntax which take inputs like DIE and produce outputs like KICK THE BUCKET. The output from such a rule will be a syntactic tree of the same kind, but its internal organization may be slightly or highly deviant from the tree structure of the input. It is to the derived tree that lexical insertion applies. There would of course be many such rules, so that we may perhaps define a whole subcomponent of syntax which functions as an *IDIOM GENERATOR*.

In the case of an idiom like *kick the bucket* the semantic input and output of the rule are quite different (although they share the property of being predicates). Pre - lexical idiom formation in grammar must mean that the "generator" takes a (derived) semantic representatian and replaces it by another semantic representation.[8] If this is to make sense, the latter must be a derived representation which essentially fulfills conditions imposed upon semantic trees by the syntactic rules that preceeds idiom formation. In the particular idiom *kick the bucket* the representation inserted by the rule may have to be marked as metaphorical (if some of the transformations that are blocked in metaphors are later), but otherwise it will be identical with the representation of the phrase KICK THE BUCKET in its literal sense. The funny effect of many such idioms is due to the fact that they can be understood both as derived directly from the underlying representation of their literal sense and, via idiom formation, from a quite different underlying representation. If these were merely a consequence of arbitrary homonomy of lexical entries it would be hard to explain why so many metaphors are syntactically perfectly well - formed on a literal reading.

If we now return to the surface verb *come* in its various idiomatic uses : *come about*, *come up (for discussion)*, etc., these undoubtedly have more or less different underlying representations, but the assumption would be that the idiom generator replaces them by one common representation, viz. that of the "ordinary" verb *come*. If this representation forms a surface verb, lexical insertion gives *came*, but if the element CAUSE has been lifted and included in the verb, lexical insertion gives *bring*. There will be one lexical entry for each of these surface verbs. which explains the regularity of the alternation *come - bring*.

The treatment of the different idiomatic uses of *come* will thus differ from the treatment of homonyms like *race* 'species' ane *race* 'competition'. In the former case a common representation is inserted by idiom formation, in the latter case two lexical entries happen to yield identical phonological representations. It goes without saying that a distinction between these two types of derivational coalescence is extremely difficult to make in actual practice, but that is a problem which has concerned lexicologists for a long time (within more or less different frameworks of description), I have nothing useful to say about this at present. However, another example may help to illustrate the difference.

In Danish there is a surface verb *træde*$_1$ 'tread', which also occurs in many idiomatic expressions such as *træde i spinaten* 'put' one's foot in it' (literally : 'step on the the spinach'). There is another verb *træde*$_2$ 'thread (a needle)'. The two verbs *træde*$_1$ and *træde*$_2$ have more or less similar inflections, whereas the various idiomatic occurrences of *træde*$_1$ have absolutely identical inflections. This suggests that *træde*$_1$ is mastered as one verb listed at one place in the lexicon, whereas *træde*$_2$ is a different verb, which just happens to be homonymous with *træde*$_1$ in some of its forms. But of course in internalized lexicon may be organized differently depending on the input data one has received. I remember as a child hearing *traede*$_2$ in the infinitive in expressions like *jeg skal lige træde nålen* 'I just have to thread the needle'. My reaction was that this must be some funny idiom containing *træde*$_1$, and it was not until later that I realized that it is a different verb derived from *tråd* 'thread'. According to the model outlined above, this later statement would mean that some information was moved from the "idiom generator" to the "lexicon proper", or rather that an entity whose lexical status was ambiguous became uniquely allocated to the lexicon proper because of the acquisition of supplementary, unambiguous data.

4. The bipartition of lexical rules.

According to the hypothesis outlined above a surface verb like *come* in such expressions as *come about* is inserted via two kinds of rules : (i) idiom formation, which converts the underlying predicate (meaning something like HAPPEN) into COME + ABOUT, and (ii) lexical insertion, which specifies the (non - predictable) phonological properties of COME (and similarly of ABOUT). But kinds of rules have to do with the subject - matter of *lexicon* in a traditional sense. Thus the hypothesis actually implies that lexicon is not a unified subcomponent of grammar but comprises rules with a semantic output as well as rules with a phonological output, the former applying before the latter.

Rules that process semantic representations in the fashion suggested above[8] (also cp. Botha 1969 pp. 192–229 for arguments in favour of the existence of such rules under some form) should of course not be included in grammar without some kind of principle governing their function. I do not have empirical evidence for any suggestion of this kind, so I must confine myself to mentioning some issues that seem crucial. Green (1969 p. 81) has argued against the claim that there is only one lexical entry for such a word as *refuse* in sentences like *Harry refused Bill's request and Harry refused Bill's offer*. If lexical insertion applies to the common entry, there will be a remainder of semantic material in each case (cp. *Harry refused to grant Bill's request* and *Harry refused to accept Bill's offer)* and this must then be removed (incorporated in *request* or deleted) by post - lexical processes, which - as rightly observed by Green - leads to "unpleasant implications". Under the theory of idiom generating rules, the other hand, the shrinkage of the semantic material, i.e.

REFUSE TO GRANT → REFUSE
REFUSE TO ACCEPT → REFUSE

occurs *before* lexical insertion, so that the unfavourable implications of having just one lexical entry are avoided.

Thus, if the concept of "idiom generator" is to make any sense, its role in cases like REFUSE must be to establish a common semantic core for the various readings of the surface verb *refuse* by deleting semantic material, the lexical entry being then assumed to be identical with this common core. With metaphors like *kick the bucket*, on the other hand, we must posit a replacement of one representation by another quite different representation. Both kinds of processes state relationships which must somehow be accounted for, and the proposed device does not seem to me any more far-fetched than other possible solutions, even though its internal structure remains entirely obscure. Problems arise, however, whenever the identity of a lexical entry (in terms of a choice among several possible readings) is at issue.

Consider first idioms which are (wholly or partially) meaningless on a literal reading. If we assume that idioms like *by and large*, *go to Canossa* are composed of separate lexical items, we are probably at a loss concerning the semantic representations that from the entries for *by* and *Canossa* (even though speakers of English may associate the former with the adverb/preposition *by*, grammar theory should at least be capable of handling it as a separate item). It may be suggested that the configurations produced by idiom formation consist partly of semantic material and partly of phonologically represented items, i. e. that we get hybrid structures such as GO TO *Canossa*. Alternatively the idiom may be assumed to have the semantic form GO TO X, where X is some arbitrary representation, e. g. an index number, which occurs as an entry in lexicon. If the former solution is adopted, we get a diffusion of the process of lexical insertion, and it may be claimed that the latter solution does not convincingly cope with this problem. However, I shall leave this as it is.

A more serious problem is posed by idioms whose existence blocks a literal reading of the items involved. In Greenlandic Eskimo[9] the meaning 'large' may be expressed by a suffix *-rssuaq* or by a separate word *angisôq*. Now, *ine* means 'room', but *inerssuaq* means 'sitting room' and hence the meaning 'large room' must be expressed by *ine angisôq*. Similarly *igdlo* means 'house', and *igdlorssuaq* 'store house', so that 'big house' must be expressed by *igdlo angisôq*. Such examples abound in languages. It is no problem to have the idiom generating device translate SITTING–ROOM into ROOM+BIG and STORE–HOUSE into HOUSE+BIG, but how do we account for the fact that ROOM+BIG and HOUSE+BIG with affixation are impermissible unless they are derived by idiom formation?

The more or less complete blocking of literal readings which we can observe in the case of one-word idioms, probably reflects a quite general tendency to prefer idiomatic readings. The existence of this tendency is well known; the problem is how to explain it. If idiom rules replacing semantic structures by (wholly or partially) unrelated semantic structures (DIE → KICK THE BUCKET) actually *are* part of a grammar, it may be necessary to assume that semantic structures generated by ordinary syntactic rules are somehow checked against the output list of the "idiom generator" and avoided (to a greater or lesser degree) if occurring on that list. This requirement complicates the model substantially.

The conception of an "idiom generator" makes it possible to explain why many idioms behave like well-formed strings consisting of separate lexical items (cp. 3.1 2 above). However, the treatment of idioms as lexically complex structures may seem to clash with the fact that idioms often exhibit a certain degree of phonological fusion of their constituent parts, or more idiosyncratic phonological properties (cp. Botha 1969 for a discussion of some such phenomena). Such phonological characteristics strongly suggest that the idioms in question are lexicalized, i. e. are single entries in the lexicon.

For individual phrases or words it may well be indeterminate whether they are inserted via idiom formation and phonological specification of the constituent parts of the resulting structure, or whether they are inserted directly as lexical items. However, the lexicalization (possibly coexistent with the alternative path of idiom formation) allows for phonological idiosyncracies which then make the direct lexical derivation override the idiom derivation. This is confirmed by the fact that the lexicalized idiom ceases to block the literal meaning of the *regular* formation. In Greenlandic Eskimo nouns may be derived from verbs by means of the suffix *–vik / vfik* meaning 'place for –ing' (or 'time for –ing'). The use of the shorter form is accompanied by gemination of a stem consonant whereas the use of the longer form, which is the productive one, conditions no such modification. Now, several derivations with this suffix have acquired a specific, idiomatic sense, e. g. the derivation *nerrivik* from *neri–* 'eat' means 'table'. However, this is true only of the derivation with stem internal gemination, and hence the productive formation *nerivfik* is available with the literal meaning 'place or time for eating'. It appear that TABLE has been lexicalized, i. e. has become a separate entry rather than an idiom.

Thus it is clear that there is some kind of trading relationship between the "idiom generator" and lexicon proper. It is at present highly unclear to me how the limits of either of these devices should be defined.

Finally, it may be interesting to return to the question : at what point in grammar does lexical insertion occur ? Grosu (1971 p. 42) mentions the behaviour of *eject* and *throw out* in favour of taking lexical insertion to precede certain post - cyclic transformations : "*throw out* and *eject* could probably replace the same semantic configuration, but only the former can be affected by the particle movement transformation" (cp. *throw out* in strings like *I throw him out)*. I would suggest, however, that pre - lexical rules provide different representations in these two cases, *elect* being represented as a verb [$_V$THROW OUT] (possibly for some speakers as prefix plus stem, cf. that the constituent part may be claimed to occur in *inject*, *emit*, etc. wheras *throw out* is verb plus particle : [$_V$THROW]$_V$ +OUT before the movement transformation and before lexical insertion applies. This is confirmed by the inflection of *throw out* (past tense *threw out*), which shows that we have to do with the ordinary surface verb *throw*, i. e. that *throw out* consists of two lexical items. Thus Grosu's example does not, in my opinion, show that lexical insertion occurs befor the movement transformation, but rather that lexical insertion is sensitive to the tree structure of the input configuration.

As far as I can see the evidence presented in this paper only suggests that lexical insertion may be a very late process in grammar.

FOOTNOTES

1. A preliminary draft of this paper appeared in the *Annual Report of the Institute of Phonetics, University of Copenhagen, 5 (1971).*
2. The validity of this particular analysis is immaterial to the general principles. It is worth mentioning, however, that the analysis of causative verbs, and the apparent identification of the semantic element CAUSE with the surface verb *cause*, is not as straightforward as it looks, cp. Chomsky (1970 p. 218).
3. These alternatives were presented by McCawley at the First Scandinavian Summer School, Stockholm 1969.
4. Cf Postal (1970) p. 87-88, footnote 37.
5. I make no attempt to distinguish between metaphors and idiomatic expressions in general.
6. It will be apparent that I do not quite agree with Kiefer (1970 p. 5) that "we may safely conclude that to treat inflectional morphology in the lexicon is completely inadequate". (I hope to expound on this elsewhere.)
7. Morphology may decide on semantically doubtful cases. Cf. Weinreich (1966 p. 466): "of the two homophonous verbs *ring* (1. 'sound', 2. 'encircle'), it is to the former that the *ring* of *ring the changes* 'exhaust the variations' is related (cf. *rang the changes*, not *ringed the changes)*"
8. Semantically this will be the reverse of the process suggested by Weinreich (1966 p. 453); also cf. Kiparsky (1970 p. 277).
9. The relationship of these alleged processes to the *word-building* and *semantic extension rules* discussed in Kiparsky (1970 p. 266ff) cannot be analysed in this paper.
10. For simplicity the Eskimo examples are given in the traditional Greenlandic orthography.

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PHONOLOGY OF THE COCHIN DIALECT OF MALAYALAM

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Malayalam is the official language of the State of Kerala situated in the southern half of the West cost of India.[1] While it is bounded in the west by the Arabian sea, it is bounded in the East by the Western Ghats. The linguistic isolation arising out of the natural barriers resulted in Malayalam developing features completely different from the other Dravidian languages. Prior to the independence of the country, this state was politically divided into three units, viz., Travancore, Cochin and Malabar areas. While Travancore and Cochin were under two native rulers, the Malabar area was a district under the former Madras Presidency. The political barriers also resulted in the socio-economic isolation of the people of these three regions.[2] The speech forms of the language spoken in these regions may be designated respectively as: Travancore dialect, Cochin dialect and Malabari dialect. Of these only the Malabari dialect[3] has been analysed in detail. The speech forms of the Muslims of Malabar, viz, the Mopila dialects[4] have also been analysed. The speech forms of the Pulayas (a Hindu caste) of Tranvancore[5] was partly analysed. An attempt is made here to analyse the phonology of the Cochin dialect.

1.0 Phonemes

The dialect under consideration has fortyeight phonemes. These include thirtyseven consonants and eleven vowels. The following is an inventory of the phonemes of this dialect.

Vowels

Short			*Long*		
i	ï	u	i :		u :
e	a	o	e :	a :	o :

Consonants

p	t	t̲	ṭ	c	k
b	d	d̲	ḍ	j	g
p^h	t^h			c^h	k^h
b^h	d^h		ḍ^h		g^h
m	n	n̲	ṇ	ñ	ṅ
	s		ṣ	ś	h
	r		ṛ		
	l		ḷ		
			ḷ		
w				y	

General statement

Vowels

In terms of the part of the tongue raised for producing the vowels, the vowels show a three-way opposition, viz., front, central and back and in terms of the mouth opening, they show a two-way opposition, viz., close and open. On the basis of the oppositional features stated above, we have two vowels each in the close and open positions. The vowels in whose production, the front, the central and the back part of the tongue are raised may be designated respectively as front (i. e.), the central (ï, a) and the back (u, o) vowels. Similarly the vowels in whose production the tongue is raised to the close and open positions may be respectively disignated as close (i, ï, u) and open (e, a, o) vowels. All these vowels except /ï/ have corresponding long forms. These vowels are set up on the basis of oppositions found within words. Given below are a few sets of words for illustrating the the opposition amongst the vowels.

Short Vowels

Opposition in word-initial position: /i, e, a, o, u/[1]

iḍu	'put (imp)'	eḍuku	'take (imp)'
aḍuku	'come closure (imp)'	oḍukam	'finally'
uḍuku	'dress up'		

Opposition in word - medial position : /i, ï, u, a/

kaḷiku	'eat (imp)'	kaḷïgan	'vulture'
kaḷugu	'wash (imp)'	paḷaya	'old'

Opposition in word - final position : / i, e, a, o, u, ï /

o : ḍi	'ran'	ku : ḍe	'with'	o : ḍa	'bamboo'
eḍo	'hallo'	o : ḍu	'run (imp)'	o : ḍï	'tile'

Long vowels

Opposition in word - initial position : / i:, e:, a:, o:, u: /

i : ḍuwepï	'treasury of the state in Cochin'		
e : ḍï	'a leaf'	a : ḍï	'goat'
o : ḍï	'tile'	u : ḍïwaḻi	'by lane'

Opposition in word - medial position : / i:, e:, a:, o:, u: /

ci : ra	'amaranth'	ce : ra	'rat snake'		
ca : ram	'ashes'	co : ra	'blood'	cu : ral	'cane'

Opposition between long and short vowels :
Word - initial position

/i/ – /i :/	ira	'prey' –	i : rï	'nit'
/e/ – /e :/	eṭï	'eight' –	e : ṭa	'a kind of sheat fish
/a/ – /a :/	aṭam	'roof' –	a : ṭam	'swinging'
/o/ – /o :/	oḍiku	'break (imp)'	o : ḍiku	'cause to run'
/u/ – /u :/	uri	'a measure' –	u : ri	'uncovered'

Word - medial position :

/i/ – /i :/	cira	'scraper for coconuts'	– ci : ra	'amarnath'
/e/ – /e :/	teṅï	'coconut tree'	– te : ṅa	'coconut'
/a/ – /a :/	cakï	'oil press'	– ca : kï	'gunny'
/o/ – /o:/	koṭa	'basket'	– ko:ṭa	'fort'
/u/ – /u:/	muṭa	'egg'	– mu : ṭa	'bed bug'

The number of vowels could be nearly halved if we analyse the long vowels as a combination of short vowel followed by a phoneme of length. This procedure, however is not followed here, because the primary purpose of a analysis of this type is to utilize findings for a typological study of this dialect with the other dialects of Malayalam, including the Malabari dialect which has already been analysed[6]. Apart from the need to follow the same pattern of analysis, the reasons which prompted the retension of the long vowels in the Malabari dialect holds good here also. And while analysing Malabari dialect, among other things, it was found economical to retain the long vowels as a separate entity.

The following general statements can be made about the vowels:

i. While there are six short vowels, there are only five long vowels

i. Short vowels have more allophones than the long ones. This is partly because of treating the long and half-long vowels occurring in the word-final position as the allophones of the short vowels.

iv. The allophones of the front vowels occur in a slightly lower region than the points at which the corresponding cardinal vowels occur.

v. In the proximity of the retroflex consonants, the front vowels get retracted whereas in the proximity of ḷ the front vowels get very close to the central region. The back vowels, however, do not get centralized under the influence of these consonants; rather the back half-open vowel gets to a slightly more close position than its norm when they occur in the proximity of retroflex consonants resulting in the narrowing down of the area between /u/ and /o/.

vi. When laterals or retroflex stops follow a half-open vowel in the word-initial position, these vowels show a corresponding onset of vowel glide.

Consonants:

In terms of the place of articulation, the consonants show a six way opposition, viz., bilabial, dental, alveolar, post alveolar palatal and velar, whereas in terms of the manner of articulation (types of closure), the consonants show a four-way opposition viz.,

(i) presence of complete closure,
(ii) presence of partial closure,
(iii) presence of intermittent closure,
(iv) absence of any closure.

These oppositional groups may be designated respectively as stops, including nasals, laterals, flaps including trills, and continuants. A brief discussion of the characteristic features of these groups and the intra-group oppositon follows.

Stops including nasals.

In the production of the consonants in this group, the outgoing air stream it blocked at some point in the speech tract and then released with a sudden burst. The main intra-group opposition in this group is the presence or absence of the closure of the nasal passage (i. e., by raising lowering the velum). Thus the consonants in this group in whose production the closure of the nasal passage is present may be designated as oral stop and the consonants in whose production the closure of the nasal passage is absent may be designated as nasal stops. Oral stops and nasal stops are usually known as stops. Oral stops and would hereafter be referred to as such. Whereas the nasals show no further opposition in the manner of articulation, the stops show further intra-group oppositions which would be discussed at a later stage.

ii. In the word-final position, there is no opposition between short and long vowels.

Laterals.

Whereas in the case of stops the air stream was completely blocked at some point in the speech tract, in the case of laterals only the median line of the oral passage is blocked thereby leaving an opening along one side or on both sides of the tongue for the air to pass through. This group has three members in this dialect.

Flaps and trills.

Flaps and trill differ from the stops and the laterals in as much as the contact of the articulator with the place of articulation is not allowed to be established thereby preventing a complete or partial blockade of the airstream; rather the strictures are not retained longer than is necessary for the quick flipping contact. Trills are the automatic repetition of the flap articulation. This dialect has one flap and a trill.

Continuants.

In the production of the continuants, the airstream gets a comparatively unimpeded passage with the articulator making no contact with the place of articulation. In the manner of articulation the continuants[7] in this dialect show opposition in the presence or absence of friction. Thus all consonants in whose production the articulator is brought so close to the point of articulation that the air passing between them is made turbulent and produces an audible friction may be designated as fricatives, whereas those continuants in whose production even when all essential articulatory movements and requisite strictures are present for producing a certain sound, neither cavity nor local friction is above the threshold of perception owing to the weak pressure of the initiator, may be designated as frictionless continuants. This dialect has four fricatives and two frictionless continuants.

The oppositional features discussed so far show a total of six classes of phonemes. These are :

Stops, p, t, t̲, ṭ, c, k, b, d, d̲, ḍ, j, k, p^{h}, t^{h}, c^{h}, k^{h}, b^{h}, d^{h}, ḍ^{h}, and g^{h}.
Nasals, (m, n, n̲, ṇ, ñ, ṅ)
Laterals, (l, l̲, ḷ.)
Flaps, (r, ṛ)
Fricatives (s, ś, ṣ, h) and
Frictionless continuants (w, y)

Only six consonants occur in word-final position. These consonants are: /m, n, ḷ, l, r, y/. A word in this dialect never ends in a cluster of of consonants. The consonants stated earlier were set up on the basis of the opposition found within words. Given below are two sets of words to illustrate the oppositions amongst the consonants. The word list showing the opposition in medial position is given first as most of the consonanst do not occur in word-initial position.

Opposition in word-medial position:

apam	aṯam	atam	aṭam	paca	akam
'bread'	'a star'	'end'	'roof'	'green'	'number'
abagaḍam	adī	ende	aḍa	yajama:nan	agam
'danger'	'that'	'mine'	'a bread'	'master'	'inside'
niṣpʰalam	stʰalam			adʰan	śankʰī
without	'place'			'father'	'conch'
fruit'					
swabʰa:wam	wadʰu		paḍʰiku		me:gʰam
'nature'	'bride'		'learn'		'cloud'
ammi	panni	kaṯṉi	kaṇṇi	kaññi	maṅṅi
'grinding	'pig'	'a month'	'link'	'rice gruel'	'faded'
stone'	alaku	aḷaku			
	'was'	'measure'			
		waḷakī	'quarrel'		
	asatī		wiṣam	wiśari	lahaḷa
	'wicked person'		'poison'	'fan'	'quarrel'
	kara		kaṛa		
	'border'		'stain'		
wa:wal				wa:ya	
'bat'				'mouth'	

Opposition in word-initial position:

pala	tala	ṭṣaṇam	cadi	kala
'stool'	'head'	'soon'	'cheating'	'art'
balam	dahanam		jananam	gaṅṅa
'strength'	'digestion'		'birth'	'ganges'
pʰalam			cʰardi	kʰani
'result'			'vomitting'	'mine (noun)'
bʰaraṇi	dʰayryam			gʰanam
jar	courage			'weight'
mala	nalla		ñaṅṅaḷ	
'hill'	'good'		'we'	
	sanji		śankʰ ī	hanuma:n
	'bag'		'conch'	'monkey God'
	ra:tri	ṛa:tal		
	'night'	'a pound'		
wayal 'field'			yajama:nan	'master'

Phonemes and their allophones.

A detailed description of the individual phonemes and their allophones beginning with the vowels follows :

Vowels.

Short vowels :

/i/ a short close front unrounded vowel. It has five allophones. These allophones are as under :

[i’’] a very much centralized form occurring in the environment of / ḻ /, for e. g.,

[i’’ ḷayu :]	/iḻayu/	‘creep (imp)’
[ki’’ ḻi’’ kʸ u :]	/kiḻiku/	‘subtract (imp)’

[i] occurs before clusters except those in which the first element is -r-, for e. g.,

[cil : ə.]	/cillï/	‘glass pane’
[itṛa :]	/itṛa/	‘this much’

[i. ᵛ] a half-long and slightly more open form than [i] occurring in word - final position in disyllabic words, e. g.,

[ki : ri. ᵛ]	/ki : ri/	‘mungoose’
[cuᵛḷi.ᵛ]	/cuḷi/	‘fold’

[i : ᵛ] a long and slightly more open form than [i :] occurring in word - final position in monosyllabic words, for e. g.,

[stri : ᵛ]	/stri/	‘lady’
[i : ᵛ]	/i/	‘these’

[i ᵛ] a slightly more open from than [i] occurring elsewhere, for e. g.,

[ni ᵛ ṛb3nd3m]	/nirbandam/	‘compulsion’
[ti ᵛ ri ᵛ ñ : u :]	/tiriñu/	‘turned’
[i’’ də.]	/idï/	‘this’

/e/ a short half - open front unrounded vowel. While its horizontal variation is negligible its vertical variation is of a fairly wide range; on the one hand, it varies upto a position mid - way between half - close and half - open and on the other hand it varies to a position slightly more close than the half - close one. These allophones are as under :

[yé] a slightly retracted form with an onset glide occurring in word-initial position before /ḻ, ll/ for e. g.,

[yéḻət : ə.]	/eḻïtï/	‘letter’
[yé l : ə.]	/ellï/	‘bone’

[é] a slightly retracted form occurring (i) in word - initial position before retroflex consonants other than /ḻ/ and clusters other than /ll/ and (ii) in word - medial position before / ṛ, t /, retroflex consonants and nasal geminations except bilabial nasal, for e. g.,

[éḍek : u :]	/eḍïku/	'take (imp)'
[éṭ : ə]	/eṭï/	'eight'
[éṇ : ã.]	/eṇṇa/	'oil'
[endə.]	/endï/	'what ?'
[étṛa :]	/etra/	'how much ?'
[kéḻ3kə.]	/keḻakï/	'east'
[céṛu ^{v} p : 3m]	/ceṛupam/	'youth'
[tét̲ : ə.]	/tet̲ï/	'mistake'
[kéṭ : ə.]	/keṭï/	'bundle'
[péṇ : ə.]	/peṇṇï/	'girl'

[E] a form midway between half–close and half–open occurring in word–medial position before /11/, for e. g.,

[nEl : ə]	/nellï/	'paddy'
[nEl : i ^{v} k : a.]	/nellika/	'myrobalan'

[e.] a half–long form of [e] occurring in word final position, for e. g.,

[a^ di^{v} le.]	/adile/	'by that way'
[m3ṭe.]	/maṭe/	'the other one'

[e^] a slightly more close form than [e] occurring elsewhere :

[e^ li.^{v}]	/eli/	'rat'
[e^ c : i^{v} l]	/ecil/	'left over food'

/a/ a short open central vowel opposing in terms of the tongue height, with the only other central vowel /ï/. This gives it a greater scope in variation which ranges vertically from a half–long open position to open position and horizontally from extreme back to central region. It has ten allophones. These are as under :

[a] a short open back unrounded vowel occurring (i) in word-initial position before clusters beginning with any nasal except the bilabial nasal (ii) in word–medial position in open syllables except when preceded by /ñ/ or when followed by unvoiced stops, for e. g.,

[aṇḍi.^{v}]	/aṇḍi/	'nut'
[aṅa : ḍi.^{v}]	/aṅa : ḍi/	'market'
[cadi.^{v}]	/cadi/	'deceit'
[kayarə.]	/kayarï/	'rope'

[a] an open central unrounded vowel occurring in word initial and medial positions before clusters with /y/ or /w/ as the first element, for e. g.,

[aịla:]	/ayla/	'mackeral'
[aṵṣad^{h} 3m]	/awṣad^{h} am/	'medicine'

[tai̯rə.]	/tayrï/	‘curd’
[kau̯s3lya.]	/kawsalya/	‘a name’

[∧] a half-open back unrounded form occurring (i) in word-initial position before unvoiced stops and (ii) before all clusters except the ones mentioned in items

[∧ lp3m]	/ alpam /	’a little’
[∧c^h 3n̠]	/ ac^h an /	‘father’
[∧ m:ɐ]	/ amma /	‘mother’
[∧ ṭ:a:]	/ aṭa /	‘leech’

[a’’] an open central unrounded vowel somewhat shifted towards both backward and half-close positions occurring in word-initial position before single consonants other than unvoicied stops, for e. g.

[a^ ṇã]	/ aṇa/	‘anna’
[a^ l3k:u:]	/ alaku /	‘wash (imp)’
[a^ ɣ ima]	/ aḍima /	‘slave’

[a^] an open back unrounded vowel tending towards a half-open form occurs after /ñ/. At times before a cluster (i.e., when /a/ occurs in naCC position as in ñaṇḍï/ ‘crab’, this allophone comes very close to half-open back vowel while before a single consonant as in /ñarambï/ ‘nerve’, its norm is [a^]. A separate allophone having the value of [a], however, is not set up for this variation as this is not fully established, Examples of this allophone are as follows.

[ña^ ṇḍə]	/ ñaṇḍï /	‘crab’
[ña^ ṅ:3ḷ]	/ ñaṅaḷ /	‘we’
[ña^ r3mbə]	/ ñarambï /	‘nerve’

[3] an half-open central unrounded form occurring (i) in word-medial position in close syllables except when it is preceded by /ñ/ and (ii) in open syllables before unvoiced stops, for e. g.,

[∧ lp3m]	/ alpam /	‘a little’
[c3nda:]	/ canda /	‘a market place’
[p3t:ə.]	/ patï /	‘ten’

[ɐ] an open back rounded vowel occurring in word-final position after /mm/, /ṅ/ and after /w/, for e. g.,

[∧ m:ɐ]	/ amma /	mother’
[mu:ṅ:ɐ]	/ mu:ṅṅa/	‘owl’
[ma:ṅɐ]	/ ma:ṅa/	‘mango’
[puḍawɐ]	/ puḍawa /	‘a dress’

[a:] a long open central unrounded form occurring in word-final position except in the environments cited for [ɐ] above, in monosyllabic words and also in disyllabic words provided the first syllable of the latter is short, for e.g.,

[ta:]	/ ta /	'give (imp)'
[c3k:a: [	/ caka /	'jack fruit'
[paṉa:]	/ pana /	'palmyra'

[a.] a half - long open central unrounded form occurring in word-final position except in the environments cited:

[me : śa.]	/me : śa/	'table'
[ki^{v} ɣ ak : a.]	/kiḍaka/	'mattress'
[c3k : ara.]	/cakara/	'jaggery'

[o] an open short back rounded vowel. Lip rounding, though not a dertinent feature, is very prominent. Vertically its range varies from a position almost mid - way between close and half - close to slightly more open position than half - close position. It has five allophones which are as under :

[wo^] a slightly more close variety than [o] with an onset [w] glide occurring in word - initial position before t̠, ṭ and ḍ, for e.g.

[wo^ t : a :]	/ota/	'single'
[wo^ ṭag3m]	/oṭagam/	'camel'
[wo^ ṛi. ^]	/oḍi/	'sorcery'

[o^] a slightly close form of [o] occurring in word - initial position before /ḷ/ and /ḻ/ and in word - medial position before /ṭ, ḍ, ḷ, ḻ/ and also before any cluster except the ones having /ṇ/ as the first element, for e. g.,

[o^ ḷi^{v} k^{y} u :]	/oḷiku/	'hide (imp)'
[o^ ḻi'' k^{y} u :]	/oḷiku/	'pour (imp)'
[to^ ṭ : u :]	/toṭu/	'touched'
[po^ ɣ. ^{v}]	/poḍi/	'dust'
poḷi^{v} k^{y} u :]	/poḷiku/	'break open (imp)'
[ko^ ḻ3l]	/koḻol/	'pipe'
[ko^{v} n : u]	/konnu/	'killed'
[ko^ pra :]	/kopra/	'dried kernal of coconuts'

[o''] a very much close variety of [o] reaching almost a point mid-way between close and half - close occurring in word - medial position before a cluster having /ṇ/ as the first element, for e. g.,

[to'' ṇḍa :]	/toṇḍa/	'throat'
[po'' ṇ : 3ṉ]	/poṇṇan/	'a fool'

[o :] a long form of [o] occurring in word - final position, for e. g.,

[eḍ o :]	/eḍo/	'hallo'
[po : yo :]	/po : yo/	'has gone ?'

[o^{v}] a slightly open form of [o] occurring elsewhere, for e. g.,

[o^{v} 13k : a.]	/olaka/	'pestle for pounding rice'
[o^{v} sy3t : ə.]	/osyatï/	'testament'

[po^{v} ṭ : 3ṉ]	/poṭan/	‘dumb’
[ko^{v} di.^{v}]	/kodi/	‘desire’
[so^{v} ḷ : 3ṉ]	/soḷḷan/	‘boaster’

/u/ a short close back rounded vowel. Lip rounding is very prominent, though it is not a pertinent feature. It has the following three allophones:

[u’] a slightly fronted form occurring in (i) word-initial position and in word-medial position before /ḍ, ḻ/ and (ii) also after /ḻ/ in word-medial position, for e. g.,

[u’ḍep : ə.]	/uḍïpï/	‘dress’
[u’ḻ3k : ə.]	/uḻakï/	‘a measure’
[u’ḻu’n : ə.]	/uḻunnï/	‘black gram’
[ku’ḍa.]	/kuḍa/	‘umbrella’
[pu’ḻu :]	/puḻu/	‘worm’
[kaḻu’g3ṉ]	/kaḻugan/	‘vulture’

[u :] a long form of [u] occurring in word-final position, for e. g.,

[paśu :]	/paśu/	‘cow’
[maḻu :]	/maḻu/	‘axe’

[u^{v}] a slightly open form than [u] occurring elsewhere, for e. g.

[u^{v} ḷi.^{v}]	/uḷi/	‘chisel’
[u^{v} p : ə.]	/upï/	‘salt’
[ku^{v} ṭ : i.^{v}]	/kuṭi/	‘child’

/ï/ a short close unrounded central vowel. Its range varies from close to mid-way between half-open and half-close position. It has three allophones which are as follows:

[ï] occurring in word-initial syllable after clusters like /kr–, wr–/ etc; in other words, it occurs in initial syllable after clusters having –r– as the second element, for e. g.,

[kṛïṣi.^{v}]	/krïṣi/	‘cultivation’
] kṛïty3m]	/krïtyam/	‘punctual’
[wṛït : i.^{v}]	/wrïti/	‘cleanliness’
[d^{h} ṛïdi.^{v}]	/d^{h} rïdi/	‘urgency’

[é] a half-close central unrounded form occurring in the word-medial syllables (i. e., in II, III syllables etc. but not in the I and last syllable) for e. g.,

[u’ḍép : ə.]	/uḍïpï/	‘dress’
[kaḻég3ṉ]	/kaḻïgan/	‘vulture’
[veḷép : ə.]	/weḷïpï/	‘whiteness’

[ə.] a half-long central unrounded vowel, midway between half-closə and half-open occurring in word-final position, for e. g.,

[u^{v} p : ə.]	/upï/	'salt'
[wo$^{\wedge}$ ṭ : k : ə.]	/oṭakĭ/	'alone'
[ko^{v} mbə.]	/kombĭ/	'branch of a tree'

2.1.2 **Long vowels**:

2.1.2.1 /i:/ a long close front unrounded vowel. Its range varies vertically from front to almost to central position. Owing to the absence of a long central vowel, the opposition at this level is only between a front and back vowel, which enabled this vowel to move upto the central area. It has two allophones. These are:

2.1.2.1.2 [i:''] a very much retracted form of [i:] reaching almost to the central area occurring both in word-initial and word-medial positions before (i) / ḻ / and (ii) before / r / any consonant, for e.g.,

[i:''ḻaw3n [	/ i:ḻaw̯an /	'a caste'
[i.''ṛki^{v} ḷ]	/ i:rkiḷ /	'stalk of coconut leaf'
[i:''ṛca.]	/ i:rca /	'sawing'
[vi:''ḻu]	/ wi:ḻu /	'fall (imp)'
[ti:''ṛca.]	/ ti:rca /	'decision'

[i:] occurring elsewhere except in word-final position, for e. g.,

[i:y3m]	/ i:yam /	'lead'
[i:rə.]	/ i:rï /	'nit'
[vi:ɣə]	/ wi:ḍï /	'house'
[ni:13m]	/ ni:lam /	'laundry blue'

/e:/ a long open front unrounded vowel. Its phonetic realization is a half-close one. Its range varies horizontally from the front to almost the central region and vertically from half-close position to a position mid-way between half-close and half-open. It has three allophones. The description of these allophones follow. [e:''] a very much centralized form of [e:] occurring (i) in word-initial position before /ḷ, r, ṛ/ and (ii) in word-medial position before /ḷ, ṭ/, for e. g.,

[e:''ḻə.]	/ e:ḻï /	'seven'
[e:''ṛə.]	/ e:ṛï /	'throwing'
[e:''ṛpa:ɣə]	/ e:rpa:ḍï /	'arrangement'
[ve:''ta:ḷ3ṉ]	/ we:ta:ḷan /	'vampire'
[te:''ḷ]	/ te:ḷ /	'scorpion'

] e:'] a slightly retracted from of half-close front vowel occurring in (i) word-medial position before /d, ḍ / and before clusters beginning with /ṇ/ & /ṣ/ for e. g.,

[ve:'daṉa]	/ we:dana /	'pain'
[pe:'ḍi^{v}]	/ pe:ḍi /	'fear'
[je:''ṣṭ3ṉ]	/ jeiṣṭan /	'elder brother'
[ve:ṇḍa]	/ we:ṇḍã /	'do not need'

[eʸ :] a palatalized form of [e:] occurring in word-initial syllable after /c/ or before /k/ for e.g.,

[ceʸ : ru:]	/ ce:ru /	‘mix (imp)’
[ceʸ : la.]	/ce : la/	‘sari’
[meʸ : k : u :]	/me : ku/	‘graze (imp)’

[E :] a form mid - way between half - open and half - close occurring elsewhere, for e. g.,

[E : ṇi.ᵛ]	/e : ṇi/	‘ladder’
[E : t3m]	/E : tam/	‘high tide’
[k3cE : ri.ᵛ]	/kace : ri/	‘court’
[mE : śa.]	/me : śa/	‘table’

/a:/ a long open central unrounded vowel. Horizontally its range varies from extreme front to extreme back. Vertically its range varies from open to midway between open and half : open position. It has three allophones. A description of these allophones follows: [a:] a long open central unrounded form occurring in word - initial position, for e. g.,

[a : na.]	/a : na/	‘elephant’
[a : ḍə.]	/a : ḍï/	‘goat’
[a : śa.]	/a : śa/	‘hope’

[æ:] a long form mid - way between half - open and open position occurring in word - medial position after /ñ/, for e. g..

[ñæ : ṉ]	/ña : n/	‘I’
[ñæ : rə.]	/na : rï/	‘paddy seedlings’

[a:] a long open back unrounded form occurring elsewhere, i. e., in word medial syllables except after /ñ/, for e. g.,

[ca : ndə.]	/ca : ndï/	‘a black pigment’
[ca : ri.]	/ca : ri/	‘leaned’ (past tense)
[a : śa : ri]	/a : śa : ri/	‘carpenter’

/ o: / a long open back rounded vowel. Though lip rounding is very prominent, it is not a pertinent feature. It is realized phonetically as a half - close back rounded vowel. It has no perceptible allophones.

[o : ṛma.]	/o : rma/	‘memory’
[o : wə.]	/o : wï/	‘gutter’
[o : ndə.]	/o : ndï/	‘chameleon’
[co : ḷ3m]	/co : ḷam/	‘maize’
[to : ṭ3m]	/to : ṭam/	‘garden’
[aṅ : o : ṭə.]	/aṅṅo : ṭï/	‘towards that place’

/u:/ a long close back rounded vowel. Though lip rounding is very prominent, it is not a pertinent feature. It has three allophones, whose description follows:

2.1.2.5.1 [u:^{v}] a slightly open form of [u:] occurring both in word-initial and word-medial positions before single consonants, for e.g.;

[u:^{v} h3m]	/ u:ham /	'guess'
[u:^{v} ri^{v}]	/ u:ri /	'sank to the bottom'
[cu:^{v} ta]	/ cu:ta /	'top of the coconut frond used as torch'
[pu: pə]	/ pu:pï /	'moss'

[u:'] a slightly advanced from of [u:] occurring before /ḻ/, for e.g.

[pu:'ḻi]	/ pu:ḻi /	'sand'

[u:] a long form occurring elsewhere, for e.g.,

[u:ñ:a:l]	/ u:ña:l /	'swing'
[pu:jy3m]	/ pu:jyam /	'zero'
[cu:ṇḍ3l]	/ cu:ṇḍal /	'fishing hook'

Consonants and their allophones.

In the previous section, six classes of consonantal phonemes were set up. It is proposed to discuss in detail the intra-group oppositons of these phoneme classes and also a statement of the allophones of the individual consonants.

Stops: The stops in this dialect show opposition both in the manner of production and release. In the manner of production, they show opposition in the presence or absence of vibration of the vocal cords.Thus all stops in whose production, the vibration of the vocal cords is present may be designated as voiced stops and conversely those stops in whose production the vibration of the vocal cords is absent may be designated as unvoiced stops. In the manner of release, the stops show oppositon in the presence or absence of an extra puff of air, thus all stops that are released without any extra puff of air may be designated as unaspirated stops and those that are released with an extra puff of air may be designated as aspirated stops. These two oppositional features are found to occur only with the stops and when these two oppositional features are combined, we get four sub-classes of consonants, viz.,

unvoiced unvoiced unaspirated stop	(p, t, ṯ, ṭ, c, k)
voiced unaspirated stops	(b, d, d, j, g),
unvoiced aspirated stops	(p^{h}, t^{h}, c^{h}, k^{h}),
voiced aspirated stops	(b^{h}, d^{h}, ḍ^{h}, g^{h}).

A detailed description of each of the sub-classes of stops follows:

2.2.1 Unvoiced unaspirated stop :

This sub - class of stops show a six - way opposition in the place of articulation, these are : bilabial, dental, post-dental or alveolar, post - alveolar, palatal and velar, Of these the palatal and velar stop have four allophones each, wheras the remaining stops have only three allophones each. The patterned allophones of /p, t, t̠, ṭ/ are (i) a long form occurring inter-vocally when both the preceding and the following vowels are short, (ii) a half-long form occurring intervocally when the preceding vowel is short but the following vowel is long and (iii) a short one occurring elsewhere. The /c, k/ have the following patterned allophones: (i) a half-long form and a long form occurring in the same environments as the ones for /p, t̠, t, ṭ/ mentioned above, (iii) a short form with an palatalized form occurring in the final syllable if /k, c/ is followed by /u/ and preceded by a front vowel and (iv) a long form occurring intervocally except in the environment cited for item (iii) above when both the preceding and following vowels are short. A description of the individual stops in this sub-class follows:

/p/ an unvoiced unaspirated bilabial fortis stop. It has the three patterned allophones, for e. g.,

[p:]	[k3p : 3l]	/kapal/	‘ship’
	[ʌ p : 3m]	/apam/	‘bread’
[p.]	[t3p. a : l]	/tapa : l/	‘post’
[p]	[pan̠i,ᵛ]	/pani/	‘fever’
	[ʌlp 3m]	/alpam/	‘a little’
	[ci : ” ṛpə.]	/ci rpï/	
	[ka : pi.ᵛ]	/ka : pi/	‘coffee’

/t/ an unvoiced unaspirated dental fortis stop. It has the patterned three allophones, for e. g.,

[i :]	[ʌ t : 3m]	/atam/	‘a star’
	[viᵛ t : ə.]	/witï/	‘seed’
[t.]	[p3t. a : y3m]	/pata : yam/	‘a wooden cot cum grannary’
[t]	[tala :]	/tala/	‘head’
	[ci : ta.]	/ci : ta/	‘bad’
	[s3ty3m]	/satyam/	‘truth’

/t̠/ an unvoiced unaspirated alveolar fortis stop. It occurs only in word-medial position. It has also the patterned three allophones, for e. g.,

[t̠ :]	[kuᵛ t̠ : i.ᵛ]	/kut̠i/	‘bolt’
	[ʌt̠ : m]	/at̠am/	‘end’
[t̠.]	[viᵛ t̠a : l]	/wit̠a : l/	‘if sold’
[t̠]	[ma:t̠a:n]	/ ma:t̠a:n /	‘to change’
	[pa:t̠a]	/ pa:t̠a /	‘cockroach’

/ṭ/ an unvoiced unaspirated retroflex fortis stop. In producing this stop the tip of the tongue is curled back to form a contact at the post-alveloar region. In word-initial position, it occurs only as the first element of the cluster /ṭṣ/, which normally function like a unit phoneme. It has also the patterned three allophones, for e.g.,

[ṭ:]	[ku^{v} ṭ:i^{v}]	/ kuṭi /	'child
	[ʌ ṭ3m]	/ aṭam /	'roof'
[ṭ]	[ko$^{\wedge}$ ṭ.a:r3m]	/ koṭaram /	'palace'
	[vi^{v} ṭa:1]	/ wiṭa:1 /	'if leaves'
[ṭ]	[ṭṣi:ṇ3m]	/ ṭṣi:ṇam /	'fatigue'
	[ku:^{v} ṭa:n]	/ ku:ṭa:n /	'curry'
	[p3ṭṣi^{v}]	/ paṭṣi /	'bird'
	[iṣṭ3m]	/ iṣṭam /	'liking'

/c/ an unvoiced unaspirated palatal affricate. The first element of this consonant is a stop with a slight friction in the release, i.e., the center of the tongue forms a closure at the palatal region, but before the closure is effected, the closure is released with a slight friction. It is treated as a stop because, an opposition between a stop and an affricate is not available in this dialect and also because of its distributional features which parallels to that of stops. It has the four allophones described earlier, for e.g.,

[c:]	[p3c:a:]	/ paca /	'green'
	[u^{v}c:a:]	/ uca /	'non'
	[waḷ3c:u: [	/ waḷacu /	'bent (past tense)
	[taɣi^{v}c:a:]	/ taḍica /	'fat one'
	[ku^{v}ṛ3c:ə.]	/ kuṛacï /	'some'
[c^{y}]	[kaḷi^{v}c^{y}u:]	/kaḷicu /	'played'
	[ve^{v}c^{y}u:]	/ wecu /	·kept'
[c:]	[cadi^{v}c.a:1]	/ cadica:1/	'if cheated'
	[kaḷi^{v}c.a:1]	/ kaḷica:1 /	'if played'
[c]	[c3k:a:]	/ caka /	'jack fruit'
	[ceɣ:ci”]	/ ce:ḍci /	' elder sister'
	[pu:ca]	/ pu:ca /	'cat'

/k/ an unvoiced unaspirated velar fortis stop. It has the patterned four allophones. However, when /–a–/ precedes /–ku/ occurring in the word-final syllable/k:u/ and /k^{y} u/ are in free variation, for e.g.,

[k:]	[c3k:a:]	/ caka /	'jack fruit'
	[te^{v}k:.ə.]	/tekï /	'south'
	[po^{v}k:u:]	/poku/	'lift (imp)'
	[u^{v} ru^{v} k:u:]	/uruku/	'melt (imp)'
	[u^{v} ḍek:u:]	/uḍïku/	'dress up (imp)'

[k^{y}]	[ku'ḻi''k^{y} u:]	/kuḻiku/	'dig (imp)'
	[kaḷi^{v} k^{y} u:]	/kaḷiku/	'play (imp)'
	[ve^ k^{y} u:]	/weku/	'keep (imp)'
[k: ∾ k^{y}]	[u^{v} ṛ3k:u: ∝ u^{v} ṛ3k^{y} u:]	/uṛaku/	'put to bed (imp)'
	[i^{v}ḷ3k:u ∝ i^{v}ḷ3k^{y}u:]	/iḷaku/	'shake (imp)'
[k.]	[ve^ k.a:ṉ]	/weka:n/	'to keep'
[k]	[k3ḷ:ə.]	/kaḷḷï/	'toddy'
	[ku^{v} p:i.^{v}]	/kupi/	'bottle'
	[ca:kə.]	/ca : kï/	'gunny'
	[vi^{v} lku:]	/wilku/	'sell (imp)'
	[ś3kti.]	/śakti/	'strength'
	[c3kr3m]	/cakram/	'wheel'

2.2.2. Voiced unaspirated stops :

The six - way opposition in the place of articulation found with unvoiced stops is found here also: however, the alveolar stop has a strictly limited distribution in as much as it occurs only in two environments in the entire dialect, i. e.; (i) in a sequence of [–ṉdṛ–] as in the word [c3ṉdṛ3ṉ] /candran/ 'moon' and (ii) as the first consonant of the bound form [ḏe.] /ḏe/ 'of'. Since in all words having the [-ndṛ-] sequence, the forms [ṉ^{ḏ}ṛ] and [ndṛ] are in free variation, the occurrence of the phoneme /ḏ/ is restricted to a single bound form in the entire dialect. In the absence of any opposition between [ṉd] and [ṉ^{d}] or between [nḏ] and [nd], the phone [ḏ] could have been assigned to the phoneme /d/,. This, however, is not done because of assigning all the occurrences of [ṉ] except [ṉṉ] to the phoneme /n/. If [ḏ] is, therefore, not given pohonemic status, the opposition between [ṉd] and [nd] as found in a pair words like [e'ṉḏe.] /ende/ 'mine' and [e'nde^{v} ṅgi^{v} lu^{v} m] /endeṅgilum/ 'whichever; [e'nda.] /enda/ what ? can not be maintained. The other alternative is to put restriction on the partial overlapping of the phones of the phoneme /n/ and /ṉ/ which are permitted and assign the occurrence of the phone [ṉ] before [ḏ] to the phoneme /n/. In such a case [e'ṉde.] could be phonemisized as /eṉde/. This, however, is not done, partly because it would lead to an avoidable gap amongst the voiced stops, thus disturbing the symmetry and partly because of the need to state an additional limitation in the distribution of the phoneme /n/. It is, therefore, decided to set up /ḏ/ as a separate phoneme, however restricted its distribution may be.

Alveolar and retroflex stops do not occur in the word-initial position. In word-medial position all voiced stops occur after both short and long vowels and also after homorganic nasals. Length is pertinent only in the case of /d/, for e. g.,

/d/	[madi^{v}l]	/ madil /	‘wall’
	[ku^{v}di^{v}ra.]	/ kudira /	‘horse’
/dd/	[m3d:aḷ3m]	/ maddaḷam /	‘tambourine’
	[ud:E:ś3m]	/ uddeśam /	‘intension’

A description of each of the individual voiced stops follows:

/b/ a voiced unaspirated lenis stop. It has two allophones. These are:

[B] a bilabial fricative occurring intervocally between a short and a long vowel, for e.g.

[u^{v}Ba:y3m]	/ uba:yam /	‘expedient’
[u^{v}BE:ṭṣa]	/ ube:ṭṣa /	‘expedient’
[a^’Ba:y3m]	/ aba:yam /	‘danger’

[b] a voiccd unaspirated bilabial lenis stop occurring elsewhere, e.g.

[ban̲i^{v}y3n̲]	/ baniyan /	‘vest’
[ko^mbə.]	/ kombï]	‘branch of a tree’
[a:b3t:ə.]	/a:batï/	‘danger‘
[a^’bagaɣ3m]	/ abagaḍam /	‘danger’

/d/ a voiced unaspirated dentel stop. It has no perceptible allophone. Length is pertinent: for e. g.,

[d]	[da:h3m]	/ da:ham /	‘thirst’
	[wa:di^{v}l]	/ wa:dil /	‘door’
	[e’ndə]	/ endï /	‘what’
/dd/	[m3d:aḷ3m]	/ maddaḷam /	‘tambourine’

/d̲/ a voiced unaspirated alveolar lenis stop. It has also no perceptible allophone, for e.g.,

[d̲]	[e’n̲d̲e]	/ end̲e /	‘mine’
	[y3n̲d̲ṛdm]	/ yand̲ram /	‘machine’

/ḍ/ a voiced unaspirated retroflex stop. It has two allophones. These are: (i) a vocied retroflexed flap occurring after both short and long vowels in intervocal position and (ii) a voiced retroflex stop occurring elsewhere for e. g.,

	[mu’ḍi^{v}.]	/ muḍi /	‘hair’
	[mu:^{v}ḍi^{v}.]	/ mu:ḍi /	‘covered’
	[kaḍ3l]	/ kaḍal /	‘sea’
[ḍ]	[cu^{v}ṇḍə.]	/ cuṇḍï /	‘lip’
	[w3ṇḍi^{v}.]	/ waṇḍi /	‘cart’

2.2.2.5 /j/ a voiced unaspirated palatal stop. It is the voiced counter part of /c/. In its production, the center of the tongue comes in contact with the palate but before the closure is effected, it is released with clearly audible friction noise; thus phonetically it is an affricate. It is considered as a stop owing to the absence of opposition between a stop and affricate and also due to its distributional features which paralles that of the stops. It has no perceptible allophone.

[je^n̠3l]	/ jenal /	'window'
[su:ji.^{v}]	/ su:ji /	'thread'
[ra:jy3m]	/ ra:jyam /	'country'
[ʌ n̠jə.]	/ ɐnjï /	'Five'

2.2.2.6 /g/ a voiced unaspirated velar stop. It has two allophones. These are: (i) [ġ] a voiced velar with slight friction. The element of friction is very nominal and the muscle control is very lax. It occurs intervocally after short vowels and (ii) a voiced velar stop occurring elsewhere, for e.g.,

[g]	[paġ31]	/ pagal /	'day'
	[ci^{v} ṛaġə.]	/ciṛagï/	'feather'
	[pu^{v} ġa]	/puga/	'smoke'
[g]	[taḍa : g3m]	/taḍa : gam/	'lake'
	[a : rogy3m]	/aro : gyam/	'health'
	[s3ṅagḍ3m]	/saṅgaḍam/	'sorrow'
	[a : gṛah3m]	/a : graham/	'desire'

Unvoiced aspirated stops :

As opposed to the six - way opposition in the place of articulation found with the unaspirated stops, the unvoiced aspirated stops show only a four - way opposition in the places of articulation. These are: bilabial, dental, palatal and velar. On the basis of the amount of the extra puff of air released with the stops, three levels of aspiration can be set up. These are : (i) fully aspirated, (ii) half-aspirated and (iii) just nominal aspiration. The three levels of aspiration are maked respectively [^{h}] ["] and [']. A general statement regarding the distribution of these three levels of aspiration can not be given, as they differ from consonant to consonant. The following are the descriptions of the unvoiced aspirated stops.

/p^{h} / an unvoiced aspirated bilabial stop. It has no perceptible allophone.

[p^{h}]	[phal3m]	/p^{h} alam/	'fruit'
	[ni^{v} ṣp^{h} al3m]	/niṣp^{h} alam/	'without fruit'

/t^{h} / an unvoiced aspirated dental stop. The puff of air released is very nominal. In the data collected, the only environment in which this phoneme occurs is after /s–/. Since in this environment /t/ also occurs /t/ has to be given the phonemic status.

[t']	[st'a : ṉ3m]	/st^{h} a : nam/	'position'
	[vi^{v} st'a : r3m]	/wista : ram/	'breadth'

/c^{h} / an unvoiced aspirated palatal affricate. Like its unaspirated counterpart, it is also treated as a stop owing to its distributional features. It has the following three allophones, viz., (i) [c^{h}] a fully aspirated form occurring in word - initial position and also in the second syllable of a dysyllabic word, provided the consonants in the first syllable are unaspirated ones, (ii) [c''] a slightly aspirated form occurring in the second syllable of a polysyllabic word and (iii) [c'] a form having just a puff of air occurring elsewhere, for e. g.,

[c^{h}]	[c^{h} 3ṛd'i^{v}]	/c^{h} ard^{h} i/	'vomitting'
	[ʌ c^{h} 3ṉ]	/ac^{h} an/	'father'
	[mu:ṛc^{h} 3m]	/mu:rc^{h} am/	'sharpness'
[c'']	[mu:ṛc''ayu^{v} ḷ:a.]	/mu :rc^{h} ayuḷḷa/	'one having sharpness'
[c']	[mu^{v} du^{v} mu^{v} t:3c ^{h}3ṉ]	/mudumutac^{h} an/	'great grand father'
	[mu:^{v} t3c'3ṉ]	/mu:tac^{h} an/	'paternal uncle'

/k^{h} / an unvoiced aspirated stop. In all its occurrence only the second level of aspiration is found.

[k'']	[k''aṉi^{v}]	/k^{h} ani/	'mine (noun)'
	[k''aja:ṉa.]	/k^{h} ajana/	'treasury'
	[s3ṉk''ya.]	/sank^{h} ya/	'amount'
	[mu:ṛk''3ṉ]	/mu:rk^{h} an/	'cobra'

Voiced aspirated stops.

A four-way opposition in the place of articulation is found with the voiced aspirated stops also. But the places of articulation are not the same for both the unvoiced aspirated and voiced aspirated stops in as much as the unvoiced aspirated stop series has a palatal stop, the voiced aspirated series has a retroflex one but no palatal stop; the other three places are the same for both. Given below is a description of the voiced aspirated stops.

/b^{h} / a voiced aspirated bilabial stop. It has three allophones. These are: (i) [b^{h}] a fully aspirated one occurring in word-initial position, (ii) [b''] occurring in the second syllable of a disyllabic or trisyllabic word and (iii) [b'] occurring in the second and subsequent syllables of a polysyllabic word having four or more syllables.

[b^{h}]	[b^{h} 3rta:wə.]	/b^{h} arta:wï/	'husband'
	[b^{h} a:rya]	/b^{h} a:rya/	'wife'
	[b^{h} a:r3m]	/b^{h} a:ram/	'weight'
[b'']	[g3ṛb''3m]	/garb^{h} am/	'pregnancy'
	[swab''a:w3m]	/swab^{h} a:wam/	'habit'

[b’]	[g3ṛb’3muḷ:a.]	/garb^h amuḷḷa/	‘one who is pregnent’
	[citraśalab’3m]	/citrasalab^h am/	‘butterfly’

/d^h / a voiced aspirated dental stop. It has also the three allophones based on the amount of air released with the stop. These are: (i) [d^h] occurring in word-initial position before a vowel and also in the second syllable of a disyllabic word, (ii) [d’’] occurring in the second syllable of a word having three or more syllables and also in the final syllable of a trisyllabic word and (iii) [d’] occurring elsewhere, for e.g.,

[d^h]	d^h 3rm3m]	/d^h armam/	‘charity’
	[d^h airy3m]	/d^h ayryam/	‘courage’
	[wad^h u:]	/wad^h u/	‘bride’
	[yu^v d^h 3m]	/yud^h am/	‘war’
[d’’	[vi^v d’’awɐ]	/wid^h awa/	‘window’
	[mad’’u^v r3m]	/mad^h uram/	‘sweetness’
	[a^v ’d’’i^v k.a : ri.^{v}]	/ad^h ika : ri/	‘an official’
	[a : yud’’3m]	/a : yud^h am/	‘weapon’
[d’]	[d’rïdi.^{v}]	/d^h rïdi/	‘urgency’
	[b^h araṇa:d’i^h k.a:ri.^{v}]	/b^h araṇa:d^h ika:ri/	‘administrator’

/ḍ^h / a voiced aspirated retroflex flap. Eventhough it is a flap having no other allophone, it is treated as a stop for the sake of symmetry. The extra puff of air released may be compared to that of the medium level marked [’’]. It occurs only in intervocal position

[paɣ ’’i^v k^y u:]	/paḍ^h iku/	‘learn (imp)’
[pa:ɣ’’3m]	/pa : ḍ^h am/	‘lesson’

/g^h / a voiced aspirated velar stop. It occurs both in word - initial and medial positions. It has two allophones. These are : (i) an aspirated velar fricative occurring intervocally when both the vowels are short and (ii) an aspirated velar stop occurring elsewhere. The extra puff of released with both the allophones are of the medium level marked [’’].

[g’’]	[mu^v g’’3m]	/mug^h am/	‘face’
	[nug’’3m]	/nag^h am/	‘nail’
[g’’]	[g’’an̲3m]	/g^h anam/	‘weight’
	[mE:g’’3m]	/me:g^h am/	‘cloud’

Nasals.

The six - way opposition in the place of articulation found with the nasals parallels that of the unaspirated stops. Though all nasals are voiced, voicing is not a pertinent feature with the nasals. In intervocal position, both the long and short forms are in opposition; hence long froms are treated as double; the palatal nasal, however, does not show this opposition. Only /m, n/ have the maximal distribution. /n̲/ has the least distribution in as much as it occurs only intervocally that too, only in gemination. A description of the nasals follows :

/m/ a voiced bilabial nasal. It has no perceptible allophone. Length is pertinent: for e. g.,

	[mala:]	/mala/	'mountain'
	[ta:mara:]	/ta:mara/	'lotus'
/m/	[cu^{v} mɐ:]	/cuma/	'cough'
/mm/	[cu^{v} m:ɐ:]	/cumma/	'for nothing'
	[∧ m:ɐ]	/amma/	'mother'

So as to permit a maximal distribution to atleast one out of the two phonemes having defective distribution, viz., /n/ & /n̲/, a partial phonemic overlapping is allowed, thereby limiting the opposition between these two phonemes to that of intervocal position in gemination. All other occurrences of the alveolar phone are assigned to the dental phoneme.

/n/ a voiced dental nasal. It has two allophones. These are: (i) a dental form occurring in word-initial position before a vowel and in word-medial positions before voiced dental stop or after unvoiced dental stop and (ii) an alveolar nasal occurring elsewhere. Length is pertinent.

[n]	[na:i]	/na:y/	'dog'
	[e'ndə.]	/endï/	'what?'
	[r3tn3m]	/ratnam/	'jewel'
[n̲]	[n̲ya:y3m]	/nya:yam/	'justice'
	[pan̲a.]	/pana/	'palmyra'
	[po$^{\wedge}$ n̲ma:]	/ponma/	'a bird'
	[sain̲y3m]	/saynyam/	'army'
/n/	[p3n̲i.^{v}]	/pani/	'fever'
/nn/	[p3n:i.^{v}]	/panni/	'pig'
	[an:ə.]	/annï/	'that day'

/n̲/ a voiced alveolar nasal. It occurs only in gemination in intervocal position.

[k3n̲:i.^{v}]	/kan̲n̲i/	'a month'
[e'n̲:e.]	/en̲n̲e/	'me'
[∧ n̲:3m]	/an̲n̲am/	'cooked rice particle'

/ṇ/ as voiced retroflex nasal. It does not occur in word-initial position. Length is pertinent. It has no perceptible allophone.

[e'ṇã]	/eṇa/	'mate'

	[w3ṇḍi.ᵛ]	/waṇḍi/	'cart'
	[ka\iᵛ ñ:a:ṇ]	/kaḍiña:ṇ/	'rein'

/ñ/ a voiced palatal nasal. It does not occur finally. Length is not pertinent. It has two allophones. These are a long form occurring intervocally and a short form occurring in word-initial position.

[ñ:]	[m3ñ:a:]	/maña/	'yellow'
	[ci:ñ:u]	/ci:ñu/	'decayed'
[n]	[ñæ:n]	/ña:n/	'I'
	[ñaʰ ṇḍə.]	/naṇḍi/	'crab'

/ṅ/ a voiced velar nasal. It occurs only in word - medial position. Length is pertinent. It has no perceptible allophones.

/ṅ/	[ma:ṅa]	/ma:ṅa/	'mango'
	[aṅa:ḍi.ᵛ]	/aṅa:ḍi/	'market'
/ṅṅ/	[viᵛ l3ṅə.]	/wilaṅī/	'handcuff'
	[tu:ṅ:u:]	/tu:ṅṅu/	'hang (imp)'
	[c3ṅ:ala.]	/caṅṅala/	'chain'

Fricatives

There are four fricatives including three sibilants. All these fricatives are unvoiced though unvoicing is not a pertinent feature. Length is pertinent only in the case of the dental fricative. No fricative occurs in word - final position. The following is a description of the fricatives.

/s/ a grooved unvoiced dental or post - dental fricative. Length is a pertinent feature. It has no perceptible allophone.

	[s3ṅgaḍ3m]	/saṅgaḍam/	'sorrow'
	[slE : ṯə.]	/sle:ṯī/	'slate'
	[aᴬ'sat:ə.]	/asatī/	'a wicked person'
/ss/	[maṉ3s:ə.]	/manassī/	'mind'
	[way3s:ə.]	/wayassī/	'age'

/ṣ/ a grooved unvoiced retroflex fricative. It occurs only in word-medial position. It has no perceptible allophone.

	[viᵛ ṣ3m]	/wiṣam/	'poison'
	[k3ṣṭ3m]	/kaṣṭam/	'hardship'
	[ṭṣi : ṇ3m]	/ṭṣi : ṇam/	'weakness'

/ś/ a grooved unvoiced palatal fricative. It has also no perceptible allophone.

	[śeᴬ ri.ᵛ]	/śeri/	'right'
	[viᵛ śari.ᵛ]	/wisari/	'fan'

/h/ an unvoiced velar fricative. Its phonetic realization is at the glottal region, however, it is treated as a velar fricative for the sake of symmetry. It has no perceptible allophone.

[hrīday3m]	/hrīdayam/	'heart'
[haṉuᵛ ma : n]	/hanuma : n/	'the monkey God'

Trills

In order to permit a maximal distribution to atleast one out of the two phonemes having defective distribution, a partial phonemic overlapping is allowed between [r] and [ṛ] thereby limiting the opposition between the two phonemes /r, ṛ/ to that of: (i) word-initial and (ii) intervocal positions. All other occurrences of the trill phone are assigned to the flap phoneme. Though both the phonemes are voiced, voicing is not a pertinent feature. Given below is a description of these two phonemes.

2.2.7.1 /r/ an alveolar flap. It has two allophones. These are: (i) a flap occurring in word-initial position and also in intervocal position and (ii) a post-alveolar trill occurring elsewhere.

[r]	[ro:m3m]	/ro:mam/	'hair on the body'
	[kara:]	/kara/	'border'
[ṛ]	[kṛīṣi.ᵛ]	/krīṣi/	'cultivation'
	[aṛt'3m]	/artʰ am/	'meaning'
	[aᵛ 'w3ṛ]	/awar/	'they'

/ṛ/ a post - velar trill. It occurs only in word - initial position and intervocally. It has no perceptible allophone.

[ṛoᵛ k : 3m]	/ṛokam/	'cash'
[kaṛa:]	/kaṛa/	'stain'

Laterals

There are three lateral in this dialect. These show a two - way opposition with reference to the place of articulation; viz., alveolar and post - alveolar; in addition to the manner of articulation, the laterals produced at the post - alveolar region show a two - way opposition, viz., a lateral with a central contact and another with no contact at the center of the tongue. A description of all the three laterals follows:

2.2.8.1 /l/ an alveolar lateral. Length is a pertinent feature and the long consonants are treated as double. They occur only after short vowels in intervocal position. It has no perceptible allophones.

	[lE:h3m]	/le:ham/	'a medicine'
	[muᵛ la:]	/mula/	'breast'
	[ʌlp3m]	/alpam/	'a little'
/ll/	[muᵛ l:a:]	/mulla/	'jasmine'
	[p3l:ə.]	/pallī/	'tooth'

2.2.8.2 /ḷ/ a retroflex lateral with a contact at the post - alveolar region. Length is pertinent and long consonants are treated as double. It does not occur in word - initial position. It has no perceptible allophones.

	[puᵛ ḷiᵛ]	/puḷi/	'tamarind'
	[muᵛ ḷa:]	/muḷa/	'bamboo'
	[aᵛ w3ḷ]	/awaḷ/	'she'
[ll]	[muᵛ ḷ:ə.]	/muḷḷï/	'thorn'

/ḻ/ a retroflex lateral fricative with no contact at the post-alveolar region (place of articulation). It has no perceptible allophone. It occurs only in word - medial position.

[paḻ3m]	/paḻam/	'fruit'
[a:ḻca.]	/a:ḻca/	'week'

Frictionless continuants

There are two frictionless continuants in this dialect, one produced at the bilabial and the other at the palatal region.

/w/ an unvoiced bilabial frictionless continuant. It has three allophones. These are: (i) a labio - dental form occurring in the environment of front vowels and (ii) a short close back unrounded unvoiced vowel occurring between an open central vowel and any consonant, and (iii) a bilabial frictionless continuant occurring elsewhere.

[v]	[viᵛ ḷ3k:ə.]	/wiḷakï/	'lamp'
	[ve'ḍi.ᵛ]	/weḍi/	'gunshot'
	[ce'vi.ᵛ]	/cewi/	'ear'
	[iᵛ v3ḷ]	/iwaḷ/	'this girl'
[u]	[ṛau̱ka:]	/rawka/	'brassiere'
[w]	[wayaṛə.]	/wayarï/	'stomach'
	[kaw3ḷ]	/kawaḷ/	'cheek'
	[sw3pṉ3m]	/swapnam/	'dream'

2.2.9.2 /y/ an unvoiced palatal frictionless continuant. It has two allophones. These are: (i) a short front unrounded unvoiced vowel i. e., [i̱], occurring between /a, e, o/ short or long and either pause or any consonant and (ii) and an unvoiced frictionless continuant occurring elsewhere. Length is phonemic.

[i]	[ai̱la:]	/ayla/	'mackerel'
	[ne^ i̱tə.]	/neytï/	'weaving'
	[koᵛ i̱tə.]	/koytï/	'reaping'
[y]	[yajama:ṉ3ṉ]	/yajama:nan/	'master'
	[way3l]	/wayal/	'field'
/yy/	[neᵛ i̱yu:]	/neyyu/	'weave (imp)'
	[koᵛ i̱yu:]	/koyyu/	'reap (imp)'

FOOTNOTES

1. The writer expresses his gratitude to Dr. S. M. Katre, the then Director, Deccan College, Poona 6., for offering the writer facilities for undertaking this research work. This analysis was done in 1964 when the writer was a Senior Research Fellow in Applied Linguistics, at the Center for Advanced Studies in Linguistics, Deccan College, Poona. The writer is also to express his thanks to Shri. K. Narayanan Kutti (his informant), then, a student in the Wadia College, Poona, for sparing his valuable time. The informant hails from Earnakulam, Cochin.
2. It is not claimed that there is total uniformity of speech within each region; rather speech variations based both on socio-economical and sub-regional considerations exist in each of the regions.
3. 'A descriptive analysis of the Malabari dialect of Malayalam' by M. V. Sreedhar, Feb. 1964. Poona (unpublished Ph. D. thesis).
4. 'Mapila Malayalam' by Mrs. Susheela P. Upadhya 1970 Poona. (unpublished Ph. D. thesis) Muslim Dialect of Ernad: G. K. Panikkar Trivandrum (unpublished Ph. D. Dissertation 1968)
5. 'The Phonemic outline of a dialect of Malayalam' by Dr. V. I. Subramoniam (I. L. vol. 23)
6. ī does not occur in word-initial position.
7. ibid. M. V. Sreedhar.
8. The continuants include all the vowels; but this is not an oppositional feature with them.

INFLUENCE OF DRAVIDIAN PHONOLOGICAL SYSTEM ON SINHALESE

T. Elizarenkova

1. Applying the method of comparative typology to the New-Indo-Arayan languages, one can formulate a number of common features the sum of which makes the N.-I.-A. model. Such a model can be abstracted on each level of the language (i. e. a phonological, a morphological and a syntagmatic one).

The following common features, concerning the paradigmatic axis, can be established on the phonological level:[1]

2. The languages of this group possess comparatively many phonemes: more than 40 phonemes on the average (the tendency to increase the inventory of phonemes can be traced in the direction from the South-East to the North-West, being supported by the multiphonemic Dardic languages at the extreme North-West).

2. There are classes of the aspirated and cerebral phonemes. In the most part of the N.-I.-A. languages the non-nasal stops and affricates form quadrangular configurations of the type:

k—kh, c—ch
g—gh j—jh etc.-the vargas in Indian terminology. It is convenient to describe the situation of some of the N.-I.-A. languages as various degrees of reduction of this full scheme. The opposition of aspiration is relevant for the phonemes of all the vargas, including not only the oral stops, but the nasal stops and the liquid sonants as well (e. g. nh, ṇh, mh, lh).

3. There is an independent phoneme h beside the class of the aspirated consonants.

4. There is either a class of surd fricatives (s,ṣ) or at least one of them as an independent phoneme.

5. The opposition nasal vs. oral is relevant not only for the consonants but for the vowels as well.

6. In the most part of the N.–I.–A. languages the vocalic phonemes are identified according to their quality (open close or front back), but not to their quantity (long-short), this prosodic feature existing on the phonetic level, but being irrelevant on the phonological one.[2] The difference in quantity exists for ā–a, ī–i, ū–u, but not for e, o, or for the diphthongs (having a monophthongal variant æ:) and ɔo (having a monophthongal variant ɔ:), the last four phonemes usually being phonetically long.

The following common features of the N.–I.–A. languages can be established along the syntagmatic axis (only the words tadbhava can be taken into consideration when discussing the rules of distribution of phonemes, not the numerous loan - words from Sanskrit or from any other source):

1) Consonant clusters in the initial position are prohibited.

2) Consonant clusters in final position are prohibited.

3) There exist two main types of intervocalic consonant culsters within the range of a morpheme: a geminate and a combination of a nasal with a homorganic stop.

II. One can describe with the help of this model or with the help of a reduced variant of it a considerable part of the phonological space of the N.–I.–A. languages. The most complete degree of its reduction, and the strongest deviation from this model is found in two phonological systems: the Assamese and the Sinhalese ones. These deviations concern mainly the paradigmatic axis (both the languages possess for this linguistic family a minimum number of phonemes; e. g., in Assamese there are no cerebrals, and no palatal affricates characteristic of all the other N.–I.–A. languages). The fact that these two languages belong to the utmost periphery of the Indo - Aryan lingustic area gives grounds to suggest that these deviations are caused by the contact with the neighbouring languages, belonging to other linguistic families. The result of this contact should be a phonological interference from the side of these languages (Austric and Tibeto - Burmese in case of Assamese, Dravidian - first of all Tamil - in the case of Sinhalese),

III. Discussing the possibility of a Tamil influence upon the phonological system of Sinhalese, one should take into consideration the following circumstance: Certain features of resemblance between the Common - Indo - Aryan ane Common - Dravidian models can be found at the modern stage of development (their interpretation as a result af a mutual diachronic interference or as that of a parallel typological development being of no importance in this case). Such common features characteristic of the two models are the existence of the cerebral phonemes and the comparatively simple rules of distribution of phonemes: consonant clusters are inadmissible either in the initial or in the final position, only binary intervocalic censonant clusters are admissible within a morpheme, the geminates and the combination of a nasal with a homorganic stop playing an important part among them.

Features belonging to this common segment of the Indo-Aryan and Dravidian phonological models can't serve as an argument for the influence of a certain Dravidian language upon a certain Indo-Aryan one or vice versa. Only those features can be taken for a proof which despite their general function to serve for differentiation of the Common-Indo-Aryan from the Common Dravidian are found in a language partaining to the sphere of the other phonological model. Having this in mind one can pass to the analysis of the peculiarities of the Sinhalese phonological system.[3]

IV. The phonological system of the Sinhalese language is characterized along the paradigmatic axis by a number of features, distinguishing it from the common model, as it is represented in the majority of the Indo-Aryan languages. These characteristic features are as follows:

1) Sinhalese has a small number of phonemes as compared to the average norm of the Indo-Aryan languages. Its phonological system possesses no more than 30 phonemes (the exact number depending on the phonological interpretation of mutual relations between i–y, u–w). Out of the Indo-Aryan languages Sinhalese possesses the least number of phonemes, the language most proximate to it in this respect being Assamese with its 34 phonemes.

2) The Sinhalese consonants are not opposed as aspirated vs. non-aspirated. It is a single Indo-Aryan language lacking a class of aspirated consonantal phonemes. It should be noticed that along the diachronic axis this class is missing from the earliest stage of development–they do not exist even in Sinhalese Prakrit.[4]

3) Sinhalese has one surd fricative phoneme represented by two variants s/h. These variants are in relations of complementary distribution in certain positions only s can be in a final position or geminated intervocalically, but the forms with s in an initial or intervocalic position have usually variants with h (not always vice versa) e.g. minisā/minihā Nom. sg. "a man", minissu Nom. pl. "id"., minis adj. "pertaining to man". There are some cases where the initial h can disappear completely, and the word will have then three variants. s/h/ø, e,g. simi/himi/ imi "owning." Diachronically one

deals here with the transition s>h, a process already at work in Sinhalese Prakrit, the result of it in the modern language was that s and h became actually not opposed to each other.

4. Sinhalese possesses a half-nasal consonant n′/m′ (phonetically being a nasal consonant with an incomplete plosion which can be met only in a position after a vowel and before a following consonant, e. g. lan’ga “hear”, an′ḍanawā “to cry”, hon′da “good”, kim′bula “a crocodile” etc. The opposition of the nasals with a complete and an incomplete plosion is used in morphology to differentiate some grammatical forms (by the way, never being the only means of differentiation) e.g. im′binawā inf. “to kiss”–imbā praet, “id.” vin′dinawā inf. “to experience”–vindā praet. “id”.[5] The existence of such a regular opposition of the nasals with a complete plosion to those with an incomplete one gives grounds to take the nasal with an incomplete plosion for an independent phoneme. It is true that in comparison with the other phonemes the distributive abilities of this phoneme are rather limited for it can’t be met either in the end of a word (in the rare cases when the letter o is written in the end of a word, cp. the plural forms like man′ corresponding to the sg. man′ga, a nasal with a complete plosion is actually pronounced.[6]

5) In Sinhalese the volume of the opposition of cerebrality is less than in the rest of the N.–I.–A. languages, which is partly connected with the absence of the opposition of aspiration among the the distinctive features relevant for the Sinhalese consonants. Nevertheless the last peculiarity does not explain the absence of the cerebral nasals and sonant liquids in Modern Sinhalese (ṇ and ḷ existed in Eḷu, but in the modern language they have remained only on the graphic level[7]).

6) There are no nasal vocalic phonemes in Sinhalese, which makes a peculiarity distinguishing this language from the rest of the N. I.–A. languages.

7) The opposition long vs. short is relevant for all the Sinhalese vowels, including e, o, æ.

8) There are no diphthongs in Sinhalese, a trait which distinguishes Sinhalese first of all from the Eastern group of the N.–I.–A. languages with their large inventory of diphthongs actively functioning along the syntagmatic axis. As for the other N.–I.–A. languages, in contradistinction to Sinhalese they are characterized by the fact that no matter whether the monophthongal pronunciation of the diphthongs is admissible, in Hindi æe or æ :, ɔo or ɔ : (the diphthongal or monophthongal pronunciation being phonologically irrele-

vant in this language[8]),, there are always two, and not one half-open vocalic phoneme (more open than e, o, and more close then a).

9) As the result of these peculiarities Sinhalese has quite a different (from the other N.-I.-A. phonological systems) scheme of opposition of the vocalic phonemes an analogy of which can be found only in Assamese.[9] It can be illustrated by a following diagram:

	All-Indian							Sinh-Assam.					
	a	œ	ɔ	e	o	i	u	a	œ	o	e	u	i
grave/ acute	o	—	+	—	+	—	+	+	—	+	—	+	—

V. There are less peculiarities along the syntagmatic axis because in general Sinhalese has a Common-Indo-Aryan model of distribution of phonemes. Consonant clusters in the beginning and in the end of a word are prohibited. The initial position can be occupied by any vowel or consonant but n′/m′. The final position can be occupied by any vowel, and out of the consonants the voiced stops, palatal affricates, cerebrals, the half-nasal n′/m′, r, and the variant h of the phoneme s/h are prohibited. Thus only the surd stops, the nasals n, m, the glides y, w, and the variant s of the phoneme s/h are permitted in a final position. These limitations concerning the consonantal phonemes in the end of a word (not to mention the general rule of the N.-I.-A. languages about the inadmissibility in this position of the consonant clusters in tadbhava words) make a characteristic feature of the Sinhalese language. As to the intervocalic consonant clusters within the range of a morpheme only geminates and combinations of a nasal either with a homorganic stop or with a fricative are admissible, which agree with the Common-Indo-Aryan model of phonemic distribution.

Sinhalese has some peculiarities of phonemic distribution which distinguish this language from the rest of its family.

1) The palatal affricates (or in terms of the distinctive features the compact acute phonemes) c, j are of very small frequency. These phonemes are very seldom met in the beginning of tadbhava words, they are inadmissible in the end of a word, and are sometimes used in a geminated form in the middle of a word, e. g. occara "so much", rajjuruwō "king" etc. As a result of it the affricates are much less frequent in Sinhalese than any other classes of conson-

antal phonemes. Diachronically this situation was caused by the transition on Proto - Sinhalese : c > s, j > d, e. g. Pali, pañca > Sinh. pas "five", Pali, jana > Sinh, danā "person".

2) There is a tendency towards synharmonism in Sinhalese. In the most part of cases this tendency operates in the form of a progressive assimilation along the diachronic axis, cp., for instance, Sinh. rihiri "red" – Pali rudhira "id"., Sinh. muhudu/mūdu "ocean" –Pali : samudda "id." etc.[10] The tendency towards synharmonism in the Modern language can be traced not only in numerous lexical items, like kikiḷī "hen" - kukuḷu "cock", but also in a regular grammatical opposition of two classes of verbs : transitive vs. medio-passive, e. g. karanawā "to do" - keranawā "to be done", "to take place", labanawā "to get", "to receive" - læbenawā "to be received" and so on. This tendency distinguishes Sinhalese from the other N.-I.–A. languages. In the history of Sinhalese the tendency towards synharmonism has been operating from the IV century A. D. (only rare examples of it can be met before)[11].

IV. What are the reasons of such a strong deviation of the Sinhalese phonological system from the Common-Indo-Aryan one ? One might see it in the contact with the languages of another type, i. e. with the Dravidian ones, and first of all with Tamil which has been in close contact with Sinhalese during a long period. To prove this hypothesis one should analyse all the above mentioned characteristic features of the Sinhalese phonological system from this viewpoint.

1) The Dravidian languages possess in general a smaller inventory of phonemes than the Indo - Aryan ones, because the Dravidian languages lack whole classes of phonemes characteristic of the Indo-Aryan languages. It is compensated by very strict rules of distribution within a word, and by the obligatory sandhi rules. Tamil, for instance, possesses about 30 phonemes, the exact number of phonemes depending on the poli - or monophonemic interpretation of the geminates[12] which play such an important part in Tamil phonology and morphonology, e. g. vīṭu "a house' - vīṭṭu oblique case "id.", aḻikiṟēṉ intr. "to get spoilt" - aḻikkiṟēṉ "to spoil" etc.[13] Thus in the number of phonemes Sinhalese is closer to Tamil–than to the most part of the N.-I.–A. languages.

2) Like the other Dravidian languages, Tamil has no opposition of aspiration. Only non - aspirated consonants exist on the phonetic level, that is why in Sanskrit loan - words aspirated phonemes are substituted by the non - aspirated ones, and as a result of this process of adaptation two separate phonemic classes of Sanskrit:

the aspirated and the non-aspirated phonemes coincide in one class in Tamil.[14] It is worth mentioning that in other Dravidian languages aspirated consonants can be used in Sanskrit loan-words (for instance, in Malayalam, Kannada, Telugu[15]). The loss of this opposition in Sinhalese is due to the contact with Tamil.

3) The fricative phonemes do not form a separate class in Dravidian languages[16]. Nevertheless they exist in the majority of the Dravidian languages, and in some of them like Telugu and Kannada, are represented by more than one phoneme (which have often come to existence under the influence of the contact with the neighbouring Indo-Aryan languages). The Tamil language occupies an extreme position in this respect, for it is one of the few Dravidian languages (cp. also the Kuvi language) which lack not only the phoneme h, not very frequent in general in Dravidian languages, but, also the phonemes attested well enough in the rest of this family.[17] It should be noticed that in Tamil it is compensated on the phonetic level both by the spirantalized pronunciation of the intervocalic voiced stops and the spirantalized pronunciation of the palatal designated by the letter c, the corresponding actual sound being /ʃ/ or /s/.[18]

It is not excluded that the absence in Tamil of the independent phonemes h and s might serve as a catalyst in the process of development of certain phonetic tendencies which had been at work in the Middle-Indo-Aryan period (cp. the coincidence of the three Old-Indian sibilants into one Middle-Indian sound: Skr. s,ṣ, s > Western Prakrit s, Eastern Prakrit ṣ, as well as the role of h in Prakrit, which served as a glide separating the vowels). It might be due to Tamil that these Middle-Indian processes have acquired a certain route in Sinhalese.

4) The existence of the half-nasal phoneme in Sinhalese can't be explained directly from the contact with Tamil where either a phoneme or a sound of this kind does not exist. But the contact with Tamil has caused the loss of nasalized vowels (see below), and they had existed on the phonetic level even in the Old-Indo-Aryan period (cf. such examples as the Skr. sin'ha, van'sa, han'sa), and got to the state of half-phonemes in Middle-Indo-Aryan, that is, they might be phonologically interpreted in two ways.[19] Thus the contact with Tamil might be a factor which had determined the filling in "the void case', in the diachronic development of the phonological system of Sinhalese, and that way the half-nasal phoneme come into being. In other words, there was such a point of departure as the existence of a class of consonantal nasal phonemes with a full plosion, on the one hand

and the existence of certain conditions on the phonetic level of nasalized vowels. Then at a certain stage of development the prohibition of the nasalized vowels became relevant for Sinhalese. One of the possible results of it might be the creation of a nasal phoneme with an incomplete plosion.

5) A smaller (than in other N. I.-A. language) volume of the opposition of cerebrality among the non-nasal stops can be explained by the loss of the aspirated cerebral sonants ṇ and ḷ in the Modern language as compared to Eḷu obviously contradicts the situation in Tamil, where the class of cerebral sonants nasal and non-nasal is widely represented.

6) The absence of the nasalized vocalic phonemes in Sinhalese should be explained by the Dravidian influence, Tamil like the other Dravidian languages lacks the class of phonemes.

7) The difference in quantity of all the Sinhalese vowels in contradistinction to the other N. I.-A. languages, where the phonemes e,o have no counterparts in length, as well as the phonological character of this opposition characterizes the Common-Dravidian phonological model, that's why in Sinhalese this feature should be regarded as the result of Dravidian influence.

8) The stituation with the diphthongs in Sinhalese, where they are absent, is different from that in Tamil, where there is a diphthong aɪ. This Common - Dravidian diphthong is pronounced in Tamil like /eɪ/. There is a peculiarity which seems to be important: Tamil like other Dravidian languages has no diphthong aʊ, though the letter for this diphthong exists in the Tamil alphabet. This letter is pronounced in two syllables in Sanskrit loan - words in Tamil.[20] It is interesting that the absence of a symmetrical counterpart for the diphthong aɪ in Tamil (i. e. aʊ) is parallelled by the absence of a symmetrical counterpart for æ in Sinhalese (i. e. ɔ). It is difficult to say whether it is a case of Tamil influence upon Sinhalese or that of typological parallelism.

9) The scheme of opposition of Sinhalese vowels in tonality is justified by the inner relations of the system, and can't be explained by any outer influence.

Drawing conclusion to the paradigmatic interference of the the Tamil phonological system towards the Sinhalese one, one can say that it manifests itself mainly either in the loss of some oppositions of distinctive features in Sinhalese caused by the contact with Tamil (such as the opposition of aspiration of the consonants and that of nasalization of the vowels), or in the change of the volume of a certain opposition which has existed in Sinhalese previously.

As to the phonemic inventory Tamil influence has caused some losses in this field, but has never introduced any new phonemes into the phonological system of Sinhalese. Not a single phoneme or its variants specific to Tamil have ever been adopted by Sinhalese. This makes a considerable difference from the kind of phonological interference that Persian has effected upon the Indo-Aryan languages of the North-Western India (Hindi, for instance, has adopted from Persian such phonemes as f, z, and not a single opposition of distinctive features has lost its differentiative power from this contact).[21]

VII. There are almost no reasons to speak of Tamil interference towards Sinhalese along the syntagmatic axis. As it was mentioned before some rules of phonemic distribution being common the Indo-Aryan and Dravidian models, can't serve as a proof of an influence from one or another side. The rules of distribution peculiar to Sinhalese can't be deduced from Tamil. In contradistinction to Tamil where there are strict limitations concerning the phonemes admissible in the beginning of a word (it is either a vowel or one of the following consonants: k, c, ñ,t, n, m, y, v)[22] Sinhalese does not have any limitations (not to speak of the inadmissibility of the half-nasal n′/m′ in this position). As to the limitations concerning the phonemic inventory of the final position they are quite different in these two languages, in Tamil, for instance, stops are excluded in general from this position, in Sinhalese it concerns only voiced stops). The same can be said about the intervocalic consonant clusters.

The tendency towards synharmonism characteristic of Sinhalese can have no source in Tamil. Though traces of synharmonism can be found, according to R. Caldwell[23], in all the Dravidian lauguages this tendency comes out most distinctly and regularly in Telugu and Tulu-that is in languages which are not contiguous to Sinhalese[24].

The most characteristic feature of phonemic distribution in Tamil, consisting in the distinction between the voiced and voiceless stops being positionally conditioned, which in its turn proves the non-phonological character of this distinction, has nothing like in Sinhalese. In Sinhalese like in all the other N.-I.-A. languages the oppisition voiced-voiceless is a phonological one.[25]

There is one peculirity of phonemic syntagamatic in Sinhalese which might be if not explained then at least illustrated by a parallel in Tamil. It concerns the small frequency of the palatal affricates in Sinhalese. As it is known, in Tamil c-varga is represented by one group which is articulated not as a palatal affricate, but as a fricative (in which Tamil differs from the other language of the Southern Dravidian group-Malayalam). The absence of the platal affricates in

Tamil even on the phonetic level might influence the frequency of this opposition in Sinhalese.

One should draw a general conclusion that the interference of the Tamil phonological system towards the Sinhalese one has been actively at work along the paradigmatic axis, and almost absent along the syntagmatic one.

VIII. From the comparison of the three levels of the Sinhalese language: that of phonemes, morphemes and words it will be clear that these three levels are very different as to their openness to the interference from Tamil. On the morphemic level the interference has been at work both along the paradigmatic and the syntagmatic axis. An example of the paradigmatic interference can be seen in the formation of a grammeme of the neuter gender of the noun with a paradigm of its own in the Middle Sinhalese period.[26] There is no mention of such a grammeme in the oldest Sinhalese grammar "Sidat san'garāwa" (XIII c. A. D.), because in the language contemporary to it a binary opposition of masculine vs. feminine gender seems to exist, and the Pali neuter nouns were adapted as masculine. The formation in Sinhalese of forms of the conditional mood with the particle - t (e.g. balatot) built out of Sinhalese morphemes,[27] but according to Tamil model gives an example of Tamil interference in the field of morphemic syntagmatics. Tamil interference on the level of words is very active in syntagmatics, that is in the rules of combination of words into sentences. The difference of the Sinhalese syntax with its participial relative constructions, and the use of the nominal form of the verb as finite from the common syntactical model of the N.-I.-A. languages has Tamil syntax as its source.[28]

Thus Modern Sinhalese from the view - point of typology is in many respects a mixed language possessing features characteristic both of the Indo - Aryan and of the Dravidian models. This state was caused by a lasting contact with Tamil.

FOOTNOTES

1. The problem of this model is dealt with in a paper by T. Y. Elizarenkova, About the typology of some New - Indo-Aryan phonological systems. The XXVI International Orientalistic Congress. Papers presented by the Soviet delegation, Moscow. 1963.
2. This view was expressed first by the representatives of the London school - cf., for instance, J. R. Firth, Phonological features of

some Indian languanges, Papers in linguistics, 1934–1951. London, 1958.

3. An attempt to describe the phonological system of Sinhalese along the paradigmatic axis is made in a paper by T.Y. Elizarenkova, K opisaniju sistemy fonem singal'skogo jazyka. Materjaly naućnoj konferenzii 18–20 janvar'a 1965g; in press.

4. See W. Geiger, Chronological summary of the development of the Sinhalese language, KZ B. 76, H. 1/2, 1959.

5. See W. Geiger, Litteratur and Sprache der Singhalesen, Strassburg, 1900, p. 77.

6. Cf. about it A. M. Gunasekara, A comprehensive grammar of the Sinhalese language, Colombo, 1891, reprint 1962, p. 88.

7. Cp. the description of these consonants by W. Geiger, op. cit., chapter "Consonantismus" with their description in modern colloquial Sinhalese-Dayaratne Garusinghe, Sinhalese the spoken idiom, München, 1962, p. 15.

8. Cf. H. J. Pinnow, Uber die Vokale im Hindi, Zeitschrift für Phonetik and allgemeine Sprachwissenschaft, Jg, 7, H. 1-2, p. 43-53.

9: A valuable description of the Assamese phonological system is given by G. Ch. Goswami, An introduction to Assamese phonology, Poona, 1966, The basic unit of description in this book is a phoneme and not a distinctive feature.

10. For details see W. Geiger, op. cit., chapter "Vokalassimilation", p. 33 foll.

11. For a systematic detcription of vowel assimilation in Sinhalese consult P.B.F. Wijeratne in BSOAS, vol. 12, pt. 1, 1947

12. Cf. M. I. Lekomtseva, Fonologićeskaja sistema tamil'-skogo jazyka s toćki zrenija sinteza, in "Voprosy struktury jazyka", Moscow, 1964, pp. 52-61.

13. For details see H. Beythan, Praktische Grammatik der Tamilsprache, Leipzig, 1943, p. 78.

14. Cf. about it J. J. Glazov, Adaptacija sanskritskih zaimstvovanij fonologićeskoj sisteme tamil'skogo jazyka in "Voprosy struktury jazyka", Moscow, 1964, pp. 62-77.

15. Cf. M. S. Andronov, Dravidijskije jazyki, Moscow, 1965, p. 26 foll.

16. This feature is noted by J. Bloch as characteristic of the Dravidian languages-cf. Le dravidien in "Les langues du monde" sous la direction de A Meillot or M. Cohen, Paris, 1952, p. 492.

17. Cf. the table of comparative phoneties of the Dravidian languages-M. S. Andronov, op. cit., p. 30.

18. For details of pronunciation consult H. Beythan, op. cit., p. 28.

19. About the phonological interpretation of the nasals in Parkrit see V. V. Vertogradova, O dvuh fonologićpakih model àh prakrita maharashtri in "Problemy indojevropejskogo jazykoznanija," Moscow 1964. pp. 45-51.

20. See R. Caldwell, A comparative grammar of Dravidian, 3-d ed. revised and edited by L. Wyatt and T. R. Pillai, Madras, 1956, p. 136.

21. The term is borrowed from U. Weinreich, Languages in contact, New York, 1953.

22. The distribution of Tamil phonemes is given by M. S. Andronov, Tamil'skij jazyk, Moscow, 1960, p, 21.

23. See R. Caldwell, op. cit., p. 181.

24. According to J Bloch, even in these languages the change of the vocalic timbre of the root under the influence of that of the ending is not generalized to a degree which might give grounds to qualify it as vowel harmony.

25. It does not seem likely to be explained by a more precise definition of its chronology in Tamil this problem having caused a discussion in which a number of prominent savants have taken part-Prof. J. Bloch, T. Burrow, F. B. J. Kuiper, A Master.

26. This peculiarity is noted by W. Geiger as one of the features characteristic of this stage of development of the language.

27. Cf. H. Günther, Der Konditional im Singhalesischen, KZ Bd. 69, H 1/2, 1948, pp. 95-114.

28. Cp. the discription of these peculiarities in a grammar of modern colloquial Sinhalese-D. Garusinghe, op. cit.

A STUDY OF CONSONANT QUANTITY IN WEST GREENLANDIC

Hideo Mase and Jørgen Rischel

1. Introduction

The phonetic structure of Eskimo words is characterized by very heavy constraints on the possible clusterings of consonantal segments. These constraints become heavier the further one proceeds toward the East. In Greenland, which is the eastern most part of the contiguous region in which Eskimo is spoken, the surface phonetic word structure is characterized by a very monotonous distribution of consonant segments (see section 2. below; also cf. Bergsland 1955 p. 3. where it is shown that this is an innovation of modern Greenlandic).

On the other hand, Greenlandic is characterized by a high degree of utilization of the contrast between short and long, or single and geminate, segments. This is true of vowels as well as consonants. The importance of quantity was emphasized already in the earliest grammar of West Greenlandic (Egede 1760 p. 6-7), where it is stated that there are two kinds of "accent", viz. long and short. The data given are somewhat confusing, but there are at least some examples which – also in modern West Greenlandic - are perfect minimal pairs, e. g. /manna/[1] 'this' (Egede: Ma′nna) versus [maanna/ 'now' (Egede: Mânna); /agi (j) utaa/ 'his file' (Egede: Aggiuta′) versus /aggi (j) utaa/ 'his day of arrival' (Egede: Aggiúta). In contemporary language the functional load of the quantity contrast has obviously increased compared to the eighteenth century, because far-reaching assimilation processes have been at work after that time. Several of these processes survive as rules of grammar in modern West Greenlandic: there are numerous clusters of unlike consonant segments or of unlike vowel segments in the morphophonemic representation, but most of these do not appear at the surface phonetic level, because they are subject to assimilation (or other processes, e. g. metathesis).

The long or geminate consonant segments that occur in West Greenlandic sometimes have a clearly heteromorphemic origin. There is a suffix meaning 'new' which occurs with initial /t/ in such forms as /irnirtaaq/ 'new son' (cf. /irniq/ 'son', which shows that the uvular element "/r/" is a variant of the stem final segment). When the suffix is added to stems ending in a non - uvular consonant, e. g. the stem in /kamik/ 'boot', we get /tt/ (ɔ: [t :]) by complete assimilation : /kamittaaq/ 'new boot'. This is an extremely common type of process with most types of suffix initial consonant.

There is, however, another major source of Greenlandic long/ geminate consonant segments, namely the process generally referred to as gemination (see Bergsland 1955 p. 9 13). This process is apparently rather independent of morpheme boundaries. In many cases it affects a (synchronically) morpheme internal consonant which is geminated in connection with the addition of certain suffixes (that also often condition a modification of the final part of the stem), e.g. /nukaq/ 'younger sibling (of same sex)', plural /nukkat/; /sanawuq/ 'he woks (with woodden material)', /sannawik/ 'a workshop'. (An attempt at a description of this process will be given in section 2. 4. below.)

There is much disagreement among scholars on the cause of gemination as a historical process, and it is also a crux in syachronic phonology: It is obviously of importance for the appraisal of different explanations of this process to study various aspects of the phonetic relationship between forms with long and short consonant segments in Eskimo.

In the current phonemicization long/geminate consonants are denoted by double consonants (irrespective, of course, of their origin). In addition it posits two types of consonant clusters: (1) uvular fricative plus consonant, and (2) a unique cluster /ts/. It has, however been noted by various scholars that the quantity relationships in these clusters are very peculiar.

In clusters such as /rn/[2] in /irniq/ 'son' the second segment of the alleged consonant cluster (i. e. /n/) clearly sounds long, and native speakers asked to utter the word slowly and chopped into syllables definitely tend to say "irn-niq" rather than "ir-niq". However, it is open to question whether different types of consonants behave differently in this respects. Morever, it is open to question whether the post - uvular segment should be classified in systematic phonetic terms as a truly long segment (essentially similar to /nn/ in /iniq/ 'fire') or whether it is only a somewhat prolonged variety of the short type of segment (as in /ini (q)/ 'room').

As for the cluster that is generally rendered as /ts/ (in e. g. /tatsit/ 'lakes', /natsat/ 'caps'. /tuqutsiwuq/ 'he performs killing') the phonetically trained listener hears the first, i. e. occlusive, portion of it as long or geminate, whereas the fricative portion seems to be short. It thus makes sense to transcribe the auditory impression of this cluster as a long affricated [t :^{s}] or as a combination of stop plus affricate [t ¢].[3] However, its relationship to other types of short (single) and long (geminate) coronal stops is a problem.

The question of *short (single) or long (geminate)* in these clusters is of interest from a general theoretical point of view, because the phonological processes that apply to them are controversial; Before entering into this it is necessary to repeat that clusters in question are not the only *underlying* clusters in the language. Long consonant segments often reflected a succession of two consonants separated by morpheme boundary, since in most types of clusters (except uvular plus consonant and t + s) we find a complete, regressive assimilation, e. g. k + t → tt ([t :]), k + s → ss ([s :]). Hence it makes sense to assume a priori that clusters like r (+) n, t (+) s should be comparable in duration to the ordinary long consonant segments occurring in the phonetic surface representation of West Greenlandic, since the underlying representations are of similar complexity.

As for the clusters of uvular plus consonant the general problem may be put quite briefly like this: are these clusters (1) subject to a peculiar phonological rule that lengthens the second segment, or are they (2) subject to a very ordinary assimilation rule according to which a greater or lesser part of the first segment is assimilated to the second (with regard to some or all features) and hence produces the effect of a prolongation of the letter ?— Aa for /ts/ one might likewise suggest two phonological explanations of the longer closure hold: (1) there is a rule that lengthens stop before homorganic sibilant, (2) the sibilant is partly assimilated to the preceding homorganic stop.

It has been amply demonstrated in phonetic literature that the phonological categories "long" and "short", or "single" and "geminate", cannot be generally defined in terms of absolute values of physical duration. The actual duration of a segment is conditioned by a complex of factors having to do both with the context in which the segment occurs and with inherent features of the segment itself. Neverthelesss, it can hardly be denied that a phonological grammar that assigns the values "long" and "short" to particular phonetic segments is more successful in doing so if there is a reasonable correlation between these terms and measurable quantities. If, now, we assume that the extra segment length in the clusters above is due to segment lengthening rules, then this account would seem to be corroborated if the total duration of these clusters *clearly exceeds* the duration of other entities of the same phonological size (i. e. if the total duration of, say, q + t → rt considerably exceeds that of k + t → tt, [t:], etc.). Conversely, the assumption that we have to do with a purely assimilatory phenomenon would seem to be corroborated if the total duration of the clusters in question *is essentially similar to* that of ordinary long (geminate) segments, such as [t:] from underlying k + t, etc.

As regards /ts/ the phonological situation is quite complex. There exists in the language an affricate [ts] or, in an alternative transcription, [¢], which in all respects counts phonologically as a single, short segment. It is the obligatory reflex of underlying t before i (e. g. in such forms as /tii (q)/ 'tea', /atiq/ 'name', /aallartippaa/ 'he lets him travel away'), and this affrication is found also with the long stop segment arising from non - uvular consonant plus t before i (e. g. in /allatti/ 'secretary', with tt from underlying k + t): Obviously, t and s are neutralized in the position between t and i. Phonetically there is only one long segment or cluster beginning with a coronal stop in the position before i, which may be transcribed [t:^{s}] or [t¢]. It sometimes derives from underlying t (+) s and sometimes from underlying $\left\{\begin{matrix} t \\ k \end{matrix}\right\}$ (+) t, but there is no distinction between "/ts/" and "/tt/" befor /i/ on an autonomous phonemic level (see section 2.2 below concerning the inadequacy of the current autonomous phonemicization). This double origin of the long coronal affricate must be taken into consideration in formulating the rules deriving it from t (+) s. To put it in a somewhat oversimplified way, one may ask whether tt becomes ts before i (and hence is affected by some, probably late, rules which modify the durational relationship between t and s in this cluster), or whether ts and tt become a long (geminate) affricated stop segment by entirely different rules (these very rules producing the neutralization).[4] It must clearly be of interest to check the phonetic adequacy of such different analyses by measuring whether the affrication of the long affricate is so similar to the affrication of the short affricate (derived from single t before i) that they can be considered the same articulatory gesture. If this appears to be true, it seems beyond dispute that we should derive the affrication of underlying tt and t before i by the same rule (s) rather than assume that /tt/ takes a different path (via ts) through the phonological rules. If, on the other hand, we are faced with two clearly different kinds or degrees of affrication, the other solution may not be a priori out of question.

The phonological problems mentioned above are clearly not just problems of the synchronic description but just as much problems of diachrony. What is the nature of the historical processes that have produced the present consonant pattern of Greenlandic Eskimo ? Measurements of physical segment duration do not in themselves provide answers to such questions, but they may help to show whether the phonetic framework on which the phonological explanations are based, is a plausible model of what actually goes on.

The remainder of this paper contains first a more detailed presention of the role of consonant length (gemination) and affrication in the phonology of modern West Greenlandic, arguments being adduced in favour of a particular conception. After this follows the presentation of a rather extensive set of measuraments of consonant duration in West Greenlandic, and finally a brief discussion of how the results agree or disagree with the phonetic model implied by the phonological rules.

2. Elements of West Greenlandic phonology

2.1: The traditional description: autonomous phonemic pattern

The phonemicization that is generally used in transcribing West Greenlandic and related dialects in linguistic papers and manuals, comprises the following inventory (disregarding some quite peripheral items):

vowels .	/a i u/
stops :	/p t k q/
nasals :	/m n ṅ/
sibilants :	/s ṣ/
other continuants :	/w l j g r/

Some of these symbols are sufficiently self-explanatory (in terms of the present paper. Note, however, the following:

(stops:)	/k/ is midpalatal/prevelar; /q/ is uvular.
(sibilants:)	/ṣ/ (generally transcribed /ʃ/) is nonanterior.
(others:)	/l/ is sometimes lateral, sometimes flapped or articulated as a slightly fricative tongue-tip [ɹ] /j/ (generally transcribed /y/ is a palatal glide; /g/ (ofter transcribed / ɣ / is a midpalatal/prevelar fricative; / ɣ̣ / (often transcribed / ɣ̣ /[5] is a uvular fricative.

The most important[6] rules of allophonic variation according to this type of analysis are:

(aperture:) all vowels are lowered and retracted before uvulars; on the other hand, /a/ is raised before non-uvular consonants in the same syllable (i.e. before consonant clusters of word final consonants); in other positions /i u/ are (essentially) high, /a/ low.

(length:) in the cluster /ts/ the first consonant is long; in other clusters of two different consonants the second consonant is long.

(voice:) stops and sibilants are unvoiced; nasals are voiced; other consonants are voiced in those positions where they are manifested as short segments, but unvoiced elsewhere.

The rules of combinability of autonomous phonemes depend heavily on the interpretation of such sequences as [...i^{j} a ··], [...u^{w} i...] (see section 2.2. below). If we assume (somewhat arbitrarily) that there is a consonant segment in this position, the rules for syllabification become very simple. and the other rules of combination become simple as well:

(syllabification:) Two vowel phonemes in succession form one syllable. The vowels of adjacent syllables (within one "word")[7] are separated by one or two consonants. The initial syllable of the word may begin with zero or one consonant, the final syllable may end with zero or one consonant.

(distribution of vowels:) All vowels occur single and geminate. There is one diphthong /ai/, which however occurs only in absolutely word final position.

(distribution of consonants:) All consonants (excluding /j/, which was defined above as a glide) occur single as well as geminate. Word initially only noncontinuants, i.e. stops and nasals (except/ṅ/), are found. Word finally only stops are found. In addition to the phonemic geminates there is a series of clusters consisting of /r/ plus consonants which occur intervocalically. The second constituent of these clusters may be any consonant, except that /k g/ as well as the glide /j/ do not combine with /r/. Finally there is a unique cluster /ts/ occurring in intervocalic position.

2.2. Some major inadequacies of the autonomous phonemic notation

In contemporary phonological work the interest has shifted very much from autonomous phonemics to models that can be integrated into a transformational generative grammar. It has been argued that autonomous phonemic descriptions do not constitute a significant level of linguistic structure. Nevertheless, people still find it expedient to refer to some kind of broad, i.e. more or less genuinely autonomous phonemic, notation in discussing matters of phonology. In our opinion the expediency of such a level of reference is most conspicuous in the case of Eskimo, and we have chosen to use it in the later, experimentally oriented sections of this paper. It may therefore, be well-motivated to consider why this paradoxical situation arises for languages in general and for Eskimo in particular.

Probably the most general argument against autonomous phonemes in a generative grammar is that phonological rules operate on single phonological features (such as [±voice]) rather than on phoneme-sized segments. This means that phonemes must at any rate be interpreted as abbreviations (ad hoc symbols) for feature matrices. In itself, however, this is no real break with earlier theories.

A more specific objection against autonomous phonemes is based on the fact that phonological rules seem to be at least partly ordered. This means that there is no particular level between beginning and end of a rule complex. It should be noted, however, that this does not a priori *exclude* the possibility of devising a broad or autonomous phonemic notation whose symbols can be interpreted as abbreviations for feature matrices at some specific point in the sequence of phonological rules. If we consider the autonomous phonemic description of Greenlandic outlined above, it is rather evident (on closer inspection) that its allophonic (manifestation) rules would somehow reappear as late generative rules with no effect on deeper processes of the phonological component. This does not directly mean that the phoneme symbols reflect matrices as they appear at a particular break between "early" and "late" rules, but rather that they can be easily translated into such matrices. Therefore, the autonomous notation constitutes an expedient frame of reference in illustrations of early as well as late rules: in the former case it is possible to refer to the output of the rules without cumbersome and irrelevant indications of phonetic phenomena introduced by late rules (such as the aperture of Greenlandic /a i u/ or the voicedness of nonsibilant continuants), in the latter case it is possible to mention forms that satisfy the structural description of the late rules without indicating irrelevant high-level information. It may be theoretically preferable to have specific, letter-sized transcriptions for the input and output of every rule (as is widely done in Chomsky and Halle 1968), but this gives many technical problems and sometimes makes it rather difficult for readers not familiar with the subject-matter to keep track of the material that is used for documentation.

Now, in order for a broad or autonomous transcription to be at all meaningful as a frame of reference, it must at least be a notation in which neutralized segments are indicated by one common symbol (Kiparsky 1968 takes the autonomous phonemic specification to mean essentially this). However, much of the work that was done previously in autonomous phonemics was based on a conception of the phoneme which did not allow for neutralization. Hence in cases of factural neutralization one or the other phoneme is indicated, often arbitrarily. This is also true of the phonemicization of Eskimo. A closer consideration of some of these cases neatly reveals the fallacy of the belief that such problems can be resolved by appeal to "symmetry of distribution".

As regargds /j/ and /w/, the former is not distinct from zero at the surface level in the sequences /i (j) a/, /i (j) u/, and the latter is not distinct from zero at the surface level in the sequences /u (w) a/, /u (w) i/. These segments have a twofold origin: from underlying obstruents and as secondary segments due to a rule of glide insertion. Since the glides are weak (often virtually inaudible) it is a problem in autonomous phonemics whether to represent them as segments or not. From a generative point of view it can be shown that they *are* segments at a near-surface level, but it would be outside the scope of the present paper to go further into this.[8]

The affricate cluster /ts/ or /tt/ before /i/ poses another problem, which was outlined in section 1 above. Comparison with the behaviour of /t/ before /i/ suggests that we have /tt/ in forms like "/tatsit/" 'lakes', where as comparison with the long affricate that occurs before /a/ in forms like "/natsat/" 'caps' suggests /ts/. From a generative point of view the long affricate has a double origin, but there is no obvious reason to claim that either ts→tt, or tt→ts, before i. Rather, if we define an affricate ¢, it is reasonable to claim that

ts→t¢ (in all environments)

tt→t¢ —i

by two different processes. It is to be meaningful, the autonomous phonemic notation must represent the outputs of these two rules, and we therefore suggest that the cluster should be rendered as /t¢/. Since the latter part of the cluster auditorily resembles the manifestation of single /t/ before /i/, it would seem more consistent also to restate the analysis of the latter by splitting the autonomous phoneme "/t/" into two, viz. /t/ and /c/ (a form like "/atiq/" 'name' being restated as /ai¢q/). Adherents of autonomous phonemics should note that /t/ and /¢/ are distinct in the environments /t—a/, /t—u, cf. /attat/ ‘button’ versus /nat¢at/ ‘caps’/, or /tuttut/ ‘reindeers’ versus /put¢ut/ ‘clouds (of smoke or the like)’.

From a generative point of view the restatement of the single coronal stop as an affricate before the high front vowel implies that the second rule above is just a special case of the more general rule

t → ¢ / — i

In the absence of evidence to the contrary it seems strongly motivated to claim that this is the case, i.e. that affrication of all occurrences of underlying t before i takes place before the point in the rules that is (roughly) reflected by the autonomous notation.

We therefore tentatively change the notation as suggested above, i.e. we contend that there is a segment ¢ with the same feature specification in both /a¢iq/ and /tat¢it/, or in the pair /na¢iq/ ‘floor’ /nat¢iq/ ‘a kind of seal’. The validity of this contention from an acoustic point of view will be tested below.

There remains one major inconsistency in the autonomous notation, viz. the uvular entity in such forms as /aqqa/ ‘his name’. The non - uvular stops occur, according to the autonomous notation, both as geminates (/tt/ etc.) and in clusters with preceding /r/ (/rt/ etc.). This leaves us with a distributional problem : should the form above be transeribed /aqqa/ or /arqa/? The existence of this problem is, in our opinion, a symptom of the basic inadequacy of transcriptions like /rt/. A satisfactory solution implies a complete restatement of clusters in general, and it would thus remove the notation very much from current practice. We have preferred to leave the autonomous notation used as reference as it is on this point (i. e. we write /qq/ but /rt/). but the problem will be approached within a generative framework in the section below.

2.3. The regressive assimilation rule

As stated in section 1 above there is assimilation rule which assimilates a non - uvular consonant to a following consonant within the same word. If ordered *after* the (progressive assimilation) rule that changes t+s into t¢, the regressive assimilation rule applies without exception, as long as the first consonant in non - uvular, i. e. does not have the feature configuration

$$\begin{bmatrix} +\text{back} \\ -\text{high} \end{bmatrix}$$

(according to the feature theory of Chomsky and Halle (1968)).

Now it lies close at hand to assume that the (subjective impression of) length in the second segment of clusters like "/rp/", "/rt/", "/rn/" is a consequence of the same rule rather than due to a spurious lengthening rule. This would mean that the regressive assimilation applies also even if the first segment is uvular, but only partially in this case. The difficulty with the formulation of such a partial assimilation rule is that it is not easy to determine on a purely auditory basis what is going on. The uvularity is signalled most clearly by the influence on the preceding vowel.

It holds true generally that vowels assume a highly different quality before uvulars than before non - uvulars, cf.

qimmiq	[qim:ə q]	'dog'
qimmit	[qim:it]	'do., pl.,
tuukkaq	[tu:k:aq]	'harpoon'
tuukkat	[tu:k:et]	'do., pl.'

and the (late) rules that introduce this modification ("uvularization") of vowel before uvular applies also when a vowel is followed by one of the controversial clusters exemplified above. It is not clear, on the other hand, how much is left of the uvular consonant segment.

In terms of ordered rules nothing prevents us from assuming that the "uvularization" of vowels takes place *before* regressive consonant assimilation. If this is true, the assimilation of a uvular to a following consonant may be complete without any loss of distinctiveness, the distinction between forms like "/irniq/" and "/inniq/" being carried over to the preceding vowel. However, nothing else seems to suggest that "uvularization" of vowels is an early rule. On the contrary, it must at any rate be later than the affrication rule (see section 2.2.). Affrication of t (rt, tt) takes place also before i modified by a following uvular, but not before the high variety of a, cf.

atiq [a¢ə-q] vs. attat [et:et]

This does not seem phonetically reasonable unless the affrication takes place *before the vowcl modifications.*

The alternative, and immediately more attractive solution is that there is partial assimilation of uvular to a following consonant, but still a uvular component left to trigger the "uvularization" of the preceding vowel by a later rule. This may be conceived either in such a way that the initial portion of the uvular keeps intact (cf. the partial progressive assimilation of s to preceding t), or so that the segment is completely assimilated to the following except for the features defining its "uvularity" (in clusters like "/rt/" or "/rs/" this implies that we get a coronal stop or continuant with "uvularity" as an extra articulation it must then be left to later rules to specify how such segments are realized in the phonetic output, be it with "pre-uvularization" or in some other way). Though apparently less natural, the latter interpretation may seem to get support from another rule according to which t is assibilated to s after an underlying i. This latter rule (whose applicability has to do with very abstract properties of the underlying pattern) applies also if a consonant intervenes, cf. in conventional autonomous notation /suraarsippaa/ (from *sura+ir+t*···) 'he lets him discontinue his work' versus /aallartippaa/ (in our revised notation: /aallar¢ippaa/) 'he lets him travel away'. *If* this is a rule conditioned by phonological features rather than morphological diacritics (which is disputable since it depends on the analysis of the underlying vowel system as a three-vowel or four-vowel system) it seems immediately most favourable for the formulation of this rule to have regressive assimilation precede it. The two forms above then have the coronal sequence ^{r}tt as input to the rule, and we get straightforward assibilation to ^{r}ss after i in /suraarsippaa/ (but later affrication of ^{r}tt to ^{r}t*d* before i in /aallar¢i-ppaaa/). However, there are good reason for claiming that the alternation between stop and sibilant is *not* a phonological process.

Leaving open the question whether phonological simultaneity (in the output of the assimilation rule) of "uvularity" and other articulations implies ultimate phonetic simultaneity or successivity, we may tentatively formulate the assimilation rule without regard to the temporal relationships within the first segment of clusters. The formulation becomes rather involved since it must state that assimilation with regard to the features [±high] and [±back] fails to take place if the first and at the same time "plus" for the second feature:

$$\left|\begin{matrix} -\text{syllabic} \\ \\ \left\langle \begin{Bmatrix} [+\text{high}] \\ [-\text{back}] \end{Bmatrix} \right\rangle \\ \\ \end{matrix}\right| \rightarrow \left\|\begin{matrix} \alpha\,\text{anterior} \\ \beta\,\text{coronal} \\ \gamma\,\text{continuant} \\ \delta\,\text{nasal} \\ \left\langle \begin{matrix} \varepsilon\,\text{high} \\ \theta\,\text{back} \end{matrix} \right\rangle \end{matrix}\right| \;/\; \_\_ \left|\begin{matrix} -\text{syllabic} \\ \alpha\,\text{anterior} \\ \beta\,\text{coronal} \\ \gamma\,\text{continuant} \\ \delta\,\text{nasal} \\ \varepsilon\,\text{high} \\ \theta\,\text{back} \end{matrix}\right|$$

(It should be noted that the complexity of this rule may be due to inadequate specification of the features of underlying forms. It is likely that either the so - called velars or midpalatals should be specified as nonback or the uvulars (Swadesh's "velars") are characterized by a special feature of extreme backness. Such a feature is, however, not available in the currently used feature theory. It would lead too for to discuss the evidence for either of the two proposals in the present paper.

If we denote residual uvularity by an index letter r, the derivation of forms like "/qajartaaq/" 'new kayak' can be represented like this:

$$\text{qajaq} + \text{taaq} \rightarrow \text{qaja}^{\text{r}}\,\text{ttaq}$$

Note that the assimilation thus stated does *not* imply that the first segment has an intervening stage where it is a fricative /r/ of full segment length.

2.4. Syllable structure and consonant gemination

If we adopt the glide notation discussed in section 2.2., the semi-surface structure of Greenlandic wordforms can be given like this:

(C) V (V) (C) CV (V) (C) CV (V) (C) ...

i. e. except for the first syllable every syllable contains the CV sequence, which may be followed by none or one vowel segment plus none or one consonant segment. This kind of structure may be generated by the syllable formula

$$[CV\ (V)\ (C)\ ]_{o}$$

if we add the rule that word initial C may be specified as zero,[9] whereas initial C in other syllables is obligatory (see the discussion of glides in section 2.2.).

It is postulated by the formula that (i) an intervocalic consonant goes to the following syllable, an (ii) syllable initial or syllable final clusters do not occur: in case of intervocalic consonant clusters the first constituent goes with the preceding syllable and the second with the next.

The adequacy of this analysis is shown by the fact that the vowels are influenced strongly by the first member of a following consonant cluster but not by a following intervocalic consonant, unless it is uvular. Word final consonants have the same effect as the first member of clusteres, i.e. in both cases do we have a closed syllable. The syllable division is easily heard in slow speech, where there is loose contact before one intervocalic consonant but close contact before a cluster. The syllable division in clusters was noted already by Kleinschmidt, who for example indicated the pronunciation of /aggirpuq/ 'he comes' as *ag-gerp-poq* (Holtved 1964 p. 29). Note that this analysis applies also to the long consonants generated from uvular plus consonant.

As for "uvularization" of a vowel by a following uvular this phenomenon is found also when there is a syllable border according to the formula above, e.g. in forms like /niqi/ 'meat'. However, the domain of the rule involved does not extend further than the syllable just before the uvular, cf. that /ii/, /aa/ are modified in their entirety in such forms as /¢iiq/ 'tea', /taaq/ 'shadow', but only /a/ is modified in /agijaq/ 'fiddle', and only /i/ in /tuwiq/ 'shoulder' (note that the controversial segments /j/ and /w/ define syllable boundary in these forms).

The impression of word rhythm in Greenlandic seems to depend on the specific "weight" of each syllable. According to Kleinschmidt (1851, also see Holtved 1964 p. 30) a vowel segment counts as 2, and a syllable final consonant as 1. Hence syllables have increasing weight as follows:

V	VC	VV	VVC
2	3	4	5

There is no lexically distinctive category of stress. A certain degree of stress is generally heard on the ultimate and/or the antepenultimate syllable (in longer words sometimes on earlier syllables as well), but the impression of stress placement seems rather dependent both on the specific weight of the syllables and on the intonation. As for the latter, the tonal contour of the word is closely bound to the vowel segments. For example, the typical contour before a non-final pause is characterized by nonlow tone on the antepenultimate and ultimate vowels, and low tone on the penultimate, no matter how they are distributed on syllables,[10] schematically:

— —		— —	
(—) —		(—) —	
aawaa	'he fetches it'	akiwara	'I answer him'

The tonal rules are as yet quite imperfectly understood, but there is evidence that the vowel segment (the "syllabic") plays at least as important a role as the syllable in prosodic rules.

If we turn now to the segments that contribute to syllable "weight" in Kleinschmidt's sense, it would be expedient to have a common term for these. Although we have not demonstrated any prosodic relevance of these segments, we suggest *mora* as a classificatory term for them. We may then speak of a *vocalic mora*, i. e. (C) V (V) (C) (first vocalic mora) or (C) VV (C) (second vocalic mora and of a *consonantal mora* i. e. (C) V (V) C.) (Opinions may differ as to the status of word final C with respect to the category "mora", see below.)

The validity of a category such as "mora" in Greenlandic Eskimo appears from the phenomena associated with *gemination* as a process in Greenlandic morphology. The explanation of this process is one of the most intricate problems in the grammar of the language.[11] Anyway, gemination often has the apparent effect of "compensating" for the deletion of one or several final segments before an affix, cf. the difference between the two plural forms below:

nuna	'country',	pl. nunat
qiṅaq	'nose',	pl. qiṅṅat

or the difference between the two derivations below:

urnippuq 'comes' – urniguppaa 'comes with it'

¢iṅiwuq 'flies away' – ¢iṅṅuppaa 'flies away with it'

(stems: *urnik* versus *tiṅi*, of which the latter drops the final vowel and gets gemination of the preceding consonant instead).

Gemination also often has the overt effect of compensating for deletion of part of the affix, cf. the two variant forms below:

sanawuq 'works (with wood)'

$\left\{\begin{array}{l}\text{sanaappaa}\\ \text{sannappaa}\end{array}\right\}$ 'makes something (of wood) for him' (the underlying affix begins with u, which is assimilated to a in the first of the two alternative formations but deleted in connection with gemination of stem internal n in the latter).

Gemination is frequently acccompanied by the changes in the feature composition of the geminated segment (particularly alternation between fricative and stop, cf. /miiraq/ 'child', pl. /miiqqat/). They are even underlying segments which are entirely deleted unless they are geminated (such as underlying intervocalic g in /puuq/ 'beg', pl. /puggut/). The pattern of these alternations is not directly relevant to the quantity problem and will be disregarded here.

If we look closer at the "compensatory" effect of gemination it is interesting that it adds a *mora* in the sense defined above, and that this "compensation" happens together with the deletion of one (or several) mora. In the immediately transparent inflectional and derivational froms gemination does *not* normally occur if a consonant that is *not* mora - forming is dropped. The plurals of /umik/ 'hair of beard' and /inuk/ 'human being' are /umiit/, /inuwit/ with loss of k before the syllabic ending in both cases (and later glide insertion in the second example). Here the loss of a consonant entails no loss of mora, since the underlying full forms would be divided as follows into syllables :

u-mi-kit i nu kit

with syllable - initial and hence not mora - forming k. In plural forms like /qiṅṅat/, on the other hand, a mora is deleted no matter whether we assume underlying it or t as the plural affix; if we construct an underlying form by adding the former affix shape we get a hypothetical syllable division

*qi-ṅa-qit

and if we construct it with the latter affix shape we get hypothetical

*qi-ṅaqt

Deletion of qi in the former case means loss of a vocalic mora, viz. i, and deletion of q in the latter case means loss of a consonantal mora. Gemination of the stem internal consonant in both cases restores the mora number of the full plural forms:

qiṅ-ṅat

As regards the number of consonantal mora in the wordform, the effect of gemination with this type of plural formation is the same the effect of adding an overtly syllable - forming ending in another type of plural formation, cf. (with hyphens still indicating the mechancial division into syllables):

tu-piq 'tent' - pl. (tup-qit →) tuq-qit (added : one mora)

In this word the second vowel of the stem - which may be defined as an underlying segment whose feature specification differs some what from that of a "normal i" - is syncopated with the effect that the preceding consonant p comes to stand in a position where it forms a mora.[12]

Thus, if we count mora, we find a high degree of regularity in noun inflection (though the pattern is variegated enough in other respects). There are two reservations that must be made to this. Firstly, the gemination rule has no effect if there is already a consonant cluster at the place where gemination should occur, i. e. in such forms as

qim-miq 'dog' - pl. qim-mit

and secondly it must be stated that the types of plural formation exemplified above are not distributed according to quite rigid principles in modern usage (one hears such forms as /tupit/ 'tents'; cf. below). Nonetheless, the addition of one mora in plural versus singular forms is found in a vast number of words.

The tendency that inflection or derivation with a particular affix morpheme entails a fixed increment of the mora number in spite of morphological variation, can be observed in several types of formation, cf. the (semantically equivalent) morphological variants (explained above) :

$$\left.\begin{array}{l}\text{sa–naap paa}\\ \text{san–nap-paa}\end{array}\right\}\ \text{identical number of mora}$$

or the (semantically differentiated) variants /sannawik/ 'workshop' and /sanawwik/ 'place where to work' :

$$\left.\begin{array}{l}\text{san–na wik}\\ \text{sa–naw wik}\end{array}\right\}\ \text{identical number of mora}$$

In trying to explain the mechanism behind this surface regularity one must realise that there is a skewness in the relationship between stems ending in a vowel and stems ending in a consonant. This is clearly seen if we compare /nuna/ and /qiṅaq/ inflected with a nonsyllabic and a syllabic ending :

singular	plural	stem + a 'his'
nu–na	nu nat	nu–naa
qi–ṅaq	qiṅ–ṅat	qi–ṅaa

If a word final consonant counts as a mora then we have the same increment of mora number in the two plural forms. If, on the other hand, the final consonant is considered irrelevant to the "weight" of the word, we may state that we have the same increment of mora number with a syllabic affix (note that a stem final consonant is retained or dropped before such an affix, depending on the vowel preceding it; this does not affect the mora number at all, since the consonant will become syllable initial anyway). It seems that *deletion of an underlying consonant segment only counts as a mora loss if the non-deletion of the segment would result in a consonant cluster.* (The deletion of q in the plural of *qiṅaq* is thus a loss of mora since its retention before plural t would result in the structurally impossible form **qiṅaqt*.)

The tendency in contemporary Greenlandic goes in the direction of morphological simplification, including the gradual abolishment of certain forms with "irregularities" such as gemination. It may be foreseen that it will become increasingly more common to say /qiṅat/ 'noses' instead of /qiṅṅat/, etcetera. This can be explained as partly due to a formal ambiguity of singular forms in q. In essential respects this segment behaves as part of the stem, but it is clearly felt as a singular marker. If it is taken as part of the stem it is clear that the plural formation entails a mora loss which must be compensated for by gemination. If, on the other hand, the final consonant is interpreted as a member of a paradigm

$$\left\{\begin{array}{ll}\text{q} & \text{'singular'}\\ \text{(i) t} & \text{'plural'}\end{array}\right\}$$

it is obvious that the substitution of one ending for the other should not lead to any compensatory effects; it would be entirely parallel to the inflection

nuna – nunat

where t replaces another singular marker, viz. the absence of any affix.

As for the compensatory effect of consonant gemination it is not simple to determine with certainty whether it compensates for the deletion of an underlying mora-forming consonant or vowel in the forms cited above (Bergsland 1955 claims that it always accompanies syllable syncopation). We shall not go further into this here, nor attempt to formulate a synchronic syncopation rule as a phonological process (Underhill (1970) argues that gemination should be considered "morphological" in contemporary West Greenlandic).

3. Acoustic-phonetic investigation

As shown by the preceding sections there are three main questions concerning consonant duration in Greenlandic: (i) the relationship of "long" or "geminate" to "short" or "single" consonants, (ii) the relationship of rC-clusters to either of these types, and (iii) the relationship of the long coronal affricate to other segments or clusters. The remaining sections present some phonetic data bearing upon these questions.

3.1. Recording of material

The material for this investigation (see section 3.2. below) was recorded at the Institute of Phonetics (on Lyrec tape recorders) at several occasions in 1970-71. Informants were three male adults, Mr Robert Petersen, mag. art., amanuensis at the Institute of Eskimology ("RP"), Mr. Carl Christian Olsen, teaching assistant at the Institute of Eskimology ("CCO") and Mr Isak Heilmann, teacher ("IH"). The informants speak slightly different varieties of standard West Greenlandic as spoken in the central part of West Greenland. Besides being native speakers of Greenlandic all three informants have a scholarly insight into the language which has been of much help to us. The research presented in this paper was in fact inspired by discussions with them and with other participants at Mr: Petersen's seminars on problems of Greenlandic grammar. We are highly indebted to them for this co-operation.

It is a well-known fact that durational measurements require a carefully selected material in order to be meaningful. First of all, items to be compared must of course be recorded under comparable conditions, uttered with comparable speed, etc. Even if this is so, there is a wide range of possible types of material, ranging from a piece of normal conversation as on extreme to a set of nonsense words as the other extreme. The former of these extremes is preferable if it is crucial to find the absolute durations of segments in the particular language in running speech; the other extreme is preferable if the study is to throw light upon basic, general phonetic questions concerning articulatory gestures and their timing.

The present study does not satisfy any of these desiderata. It is in fact rather a prerequisite to such studies, the emphasis being exclusively on the basic questions presented above, i.e. *what is the difference or ratio between segments that are generally considered long and segments that are generally considered short? and: what is the status of certain controversial segments such as consonant after uvular or the coronal affricate-are these long or short in systematic phonetic terms as regards the oral closure phase?*

We have not used nonsense words as material for this study though it would have simplified the first phase of the research. One reason for not doing so is that it would propably be difficult to read such a text aloud with natural tempo relationships among the sound segments. Greenlandic words are highly analysable, and in reading a strange word form one is likely to make attempts to reinterpret it as something more familiar or reasonable, particularly with the current orthography, which the reader may not expect to be correctly used in a handwritten or typewritten text. Even with grammatical wordforms this problem may arise. In our text /tutupuṅa/ 'I am covered with ingrained dirt' was occasionally misread as /tuttuppuṅa/ 'I have caught a reindeer'.

Another problem is that since Greenlandic words are often extremely long (the average syllable number seems to exceed 4 in normal, running prose) the use of short test words (i. e., ideally of the type VCV or VCCV, where the consonants to be studied intervocalically are put in a minimum frame) would not necessarily show the typical manifestation of the quantity contrast. It would at least be desirable to see also what happens in words of average length, rather than dealing only with the extreme case.

We have preferred to use natural words for the present study, and in order that the raw data should also throw some light upon the range of manifestation of the durational features we have measured a variety of wordforms of varying length. A logical follow-up would be to investigate the influence of word length and other factors on the values measured. We have devoted a few remarks to this problem here and there below, but a closer analysis of the data from this point of view has not yet been undertaken.In the present paper, on the contrary, we have set out to find whether there is a certain constancy in the durational relationships *in spite of* variations in word structure.

The type of constancy one would look for in durational measuremets is of course not to be found in the absolute values but in the difference or ratio between the durations of segment types. Hence the material was so arranged that there were minimal or sub -minimal pairs for the segment types to be compared. The subjective impression of stress and tone contours suggests that in order for segments in analogous environments to be durationally comparable the two words should exhibit the same number of syllables, and each syllable pair should have the same number of vocalic and consonantal mora. We tried to avoid examples that did not exhibit syllable or mora isomorphy, but is not always possible. We also attempted to find word pairs with identical vowel environments for the consonants to be compared; among the pairs of words that were subminimal in this respect some were left out because the degree of openness of a preceding or following vowel obviously influenced the consonant duration considerably, but others had to be included because we had not been sufficiently successful in finding good minimal pairs for the contrast in question. – Some of the word pairs in the meterial differ as to the presence or absence of a word initial consonant. The measurements showed that the durations of all segments of the first and second syllable are influenced by the presence or absence of this consonant, i. e. there is an apparent tendency toward similar overall duration of such sequences as /#CVCV.../ and /#VCV.../. A subminimal pair like /anija/ 'his pain': /mannija/ 'its egg' thus gives a somewhat erroneous figure because the segments of the later word are somewhat shortened (in this case the difference /n/ : /nn/ becomes less than it is in truly minimal pairs). Some of the recorded words had to be left out on these grounds. (For a recent study of tendencies toward constant rate of syllable production see Slis 1968.)

3.2. Word lists

The material consists of the word pairs listed in Table I.[13] The words are given in autonomous phonemic notation according to section 2. above. In the case of /t¢/ (see section 2.2.) the morphophonemic and or orthographic status is indicated in parentheses: "(tt)" means that the long affricate is derived from underlying t(+)t in the Kleinschmidt orthography (t, vt, or gt), "(ts)" means that it is derived from t + s or is the geminate counterpart to surface /s/ in forms like /tasiq/ - /tat¢it/ (orthographically ts). The consonants measured are underlined.

The original, randomized lists were composed at different times. Due to an oversight three word pairs (i. e. 6 words in all) occurred twice in the word lists recorded, and separate averages of the measures were made. We have left them in, but they are marked as repetitions in Table I.-(Cf. section 3.4. below.)-Note also that there are several words (occurring once only in the randomized lists) which enter into two, sometimes even three different contrastive pairs, e. g. /t/ in /niqiturpuq/ is contrasted to /tt/ in /nipitturpuq/, /rt/ in /amirturpuq/, and /tø/ in /akit¢urpuq/. Thus the recorded material is not as huge as it looks in Table I.

In a couple of instances the words in CCO are numbered differently than in RP and IH, because some few words were not spoken by CCO. These differences are indicated in Table I.

3.3. Phonetic analysis

All the material was registered on mingograms displaying a "duplex oscillogram", a fundamental frequency curve, and two, three, or mostly four intensity curves (normally with an integration time of 5 ms) for the purpose of temporal segmentation.[14] As regards the signal to the intensity meters, different kinds of frequency filtering (highpass, lowpass, or bandpass filtering with different cutoff frequencies) were employed in order to facilitate the segmentation, which was found to be difficult particularly with /n/. Examples of mingograms are shown in Figs. 1-7.

As for the strategy of segmentation we did our best to define the starting-point of the stop or nasal in such a way that no possible element of fricative or vocalic "r" in the sequences /rp, rt/ etc. was included. The oral closure hold, and the explosion or affrication were

TABLE I

List of word pairs

(Numbers in parentheses refer to CCO's word list only.)

/pp/ – /p/

1. /ippak/ – /ipak/
2. /napparput/ – /napapput/
3. /cilluppallaqaa/ – /¢illupallaqaa/
4. /nappaqqut/ – /napaqqut/
5. /uppippuq/ – /upippuq/
6. /¢ippapput/ – /¢ipapput/
7. /aluppaat/ – /alupaat/

8. /uqaluppaluppuq/ – /uqalupulippuq/
9. (8) /anippallappuq/ – /anipallappuq/
10. (9) /nappaqqut/ – /napaqqut/ (repetition of pair No. 4)
11. (10) /tappipput/ – /tapipput/
12. (11) /apputaa/ - /aputaa/
13. (12) /qamippaa/ – /qalipaa/
14. (13) /ippirtuwuq/ – /ipirtuwuq/
15. (14) /kmippak/ – /qalipak/
16. (15) /ulappupput – /ulapipput/
17. (16) /aappaluppuq/ – /taapalippuq/
18. (17) /aapparput/ – /aapapput/

/rp/ – /p/

1. /nirpiqarpuq/ – /nipiqarpuq/
2. /a¢irpallərijarlugit/ – /a¢ipallarijarlugit/
3. /alurpaat/ – /alupaat/
4. /anirpallappuq – /anipallappuq/
5. /illarpalaarpuq/ – /illapalaarpuq/
6. /sirpiqarpuq/ – /¢ipiqarpuq/
7. /tarparpuq/ – /tapappuq/
8. /uqarpugut/ – /aqupiwuq/

/pp/ – /rp/

1. /nipaappuq/ – /niparpuq/
2. /uppik/ - /urpik/
3. /nipipput/ - nipirput/
4. /siippuq/ - /siirpuq/
5. /u¢ipput/ - /u¢irput/
6. /tuttupput - /tutturput/
7. /miluuppaa/ - /milurpaa/
8. /uppiṅṅuwaq/ - urpiṅṅuwaq/
9. /tukkupput/ - /tukkurput/
10. /tuuppaa/ - /tuurpaa/
11. /miluppara/ - /milurpara/
12. /aluppaat/ - /alurpaat/
13. /uqaluppaluppuq/ - /sijanirpaluppuq/
14. /anippallappuq/ - /anirpallappuq/
15. /asaluppuq/ - /asalurpuq/
16. /qaappuq/ - /qaarpuq/

/tt/ – /t/

1. /nunatta/ - /nunataq/
2. /tuttuppuṅa/ - /tutuppuṅa/
3. /¢ikittarput/ - /cikitarput/
4. /puuguttaminik/ - /puugutaminik/

5. /naalattuwarpara/ - /asatuwarpara/
6. /mattuwuq/ - /matuwuq/
7. (5) /¢ikittarpuq/ - /puwiṣitarput/
8. (6) /nipitturpuq/ - /niqiturpuq/
9. (7) /kasuttakkat/ - /kutappuq/
10. (8) /imaattuwinnarpuq/ - /kaatuwinnarpuq/
11. (9) /pilattuut/ - /siłatuut/
12. (10) /attappaa/ - /katappaa/
13. (11) /mattuwuq/ - /matuwuq/ (repetition of pair No. 6)
14, (12) /atturpaa/ - /aturpaa/

/rt/ – /t/
1. /tuqqurtaq/ - /uqqutaq/
2. /imirtarput/ - /puwiṣitarput/
3. /amirturpuq/ - /niqiturpuq/
4. /aturtarpuq/ - /kutappuq/
5. /imaartuwinnarpuq/ - /kaatuwinnarpuq/
6. /tartunaq/ - /matuwuq/
7. /arturpaa/ - /aturpaa/
8. /purtuwuq/ - /putuwuq/

/t¢/ (ts) – /t/ (comparison of stop intervals)
1. /aat¢aat/ - /aataat/
2. /irinit¢apput/ - /puwiṣitarput/
3. /akit¢urpuq/ - /niqiturpuq/
4. /kut¢appuq / - /kutappuq/
5. /qat¢uepuq/ - /aturpuq/
6. /put¢uwalippuq/ - /putuwijarpuq/
7. /aat¢arput/ - /aatarput/
8. /akit¢urpuq/ - /niqiturpuq/ (repetition of pair No. 3)
9. /siwit¢uut/ - /silatuut/

/t¢/ - /¢/ (comparison of stop and fricative intervals)
(a) /t¢/ = “ts”
1. /naat¢irpaa/ - /naacirpai/
2. (1) /¢ikit¢irpara/ - /kuulcicirpara/
3. (2) /nat¢iq/ - /naciq/
4. (3) /put¢irpuq/ - /ucirpuq/
5. (4) /inat¢it/ - /igacit/
6. (5) /naat¢irpaa/ - /naa¢irpai/ (repetition of pair No. 1)

(b) /tc/ = “tt”
7. /masat¢irpara/ - /kuul¢i¢irpara/ (second word same as in 2.)
8. (6) /kit¢irut/ - qi¢irut/

/tt/ – /rt/
1. /inuttut/ – /inurtut/

2. /uqquttarpaat/ /tuqqurtarpaat/
3. /¢ikittarpuq/ – /imirtarput/
4. /nipitturpuq/ – /amirturpuq/
5. /kasuttakkat/ – /aturtarpuq/
6. /imaattuwinnarpuq/ – /imaartuwinnarpuq/
7, /mattuwuq/ – /tartunaq/
8. /atturpaa/ – /arturpaa/
9. /paatturluni/ – /paarturluni/
10. /taatturippuq/ – /naaotulirpuq/

/tt/ -/t¢/ (ts) (comparison of stop intervals)

1. /¢ikittarpuq/ – /irinit¢apput/
2. /nipitturpuq/ – /akit¢urpuq/
3. /kasuttakkat/ – /kut¢appuq/
4. /kasuttakkat/ – /kut¢appuq/
5. /paatturluni/ – /aat¢urluni/
6. /misigittarpuq/ – /irinit¢appuq/

/rt/–/t¢/ (ts) (comparison of stop intervals)

1. /imirtarput/ – /irinit¢apput/
2. /amirturpuq/ – /amit¢urpuq/
3. /aturtarpuq/ – /kut¢appuq/
4. /paarturluni/ – /aat¢urluni/

/qq/ – /q/

1. /quuqqut/ – /quuqut/
2. /aniqquwaa/ – /aniquwaa/
3. /tuqqurtaq/ – /tuqutaq/
4. /aqqarpaa/ – /aqarpaa/
5. /nuwiqqarpuq/ – /nuwiqarpuq/
6. /aallaqqugumma/ – /aallaqugumma/
7. /nunaqqa¢iqarpuq/ – /nunaqa¢iqarpuq/
8. /qulissirasuwaqqullugu/ – /qulissirasuwaqullullugu/
9. /uqquttarpaat/ – /tuquttarpaat/
10. /piqqarpuq/ - /piqarpuq/
11. /aqquppaa/ - /aquppaa/
12. /iqqaawuq/ - /iqaarpuq/
13. /siniqqarpuṅa/ - /iniqarpuṅa/
14. /nijaqqugut/ - /nijaqurut/
15. /iqqurpuq/ - /iqurpuq/
16. /tuqqugaq/ - /tuqutaq/
17. /uqqippuq/ - /uqippub/
18. /siniqqarpaq/ - /iniqarpuq/

/nn/ - /n/

1. /maanna/ – /maana/

2. /sinniq/ - /piniq/
3. /alijannaarpuq/ - /alijanaappuq/
4. /akunnappuq/ - /takunarpuq/
5. /anniq/ - /maniq/
6. /inniqarpuq/ - /iniqarpuq/
7. /unnirluni/ - /unirluni/
8. /maanniq/ - /maaniq/
9. /annippaa/ - /anippaa/
10. /uunnarpuq/ - /uunarpuq/

/rn/ - /n/ (comparison of nasal intervals)

1. /maaniq/ - /maana/
2. /qirniq/ - /qiniq/
3. /agijarnarpuq/ - /alijanaappuq/
4. /takurnarpuq/ - /takunarpuq/
5. /marniq/ - /manib/
6. /urnilluni/ - /unilluni/
7. /urnilluni/ - /unilluni/
8. /qaarniq/ - /taaniq/

/nn/ - /rn/ (comparison of nasal intervals)

1. /manna/ - /maarniq/
2. /snniq/ - /pirniq/
3. /alijannaarpuq/ - /agijarnarpuq/
4. /akunyappuq/ - /takurnarpuq/
5. /anniq/ - /marniq/
6. /inniqarpuq/ - /irniqarpuq/
7. /unnirluni/ - /urnilluni/
8. /maanniq/ - /qaarniq/

measured separately for stops before the total duration was calculated as the sum of the two. In the case of single /q/ the point of explosion was often impossible to determine since the whole consonant was more or less fricative. It seems to be a general difference between /q/ and /qq/ that the single consonant is much more loosely articulated. The total duration could, however, be measured with a fair degree of accuracy in spite of the unstable character of the oral articulation. There were no similar problems with the other types.

The measurements of consonant duration was made by one of the authors (HM) according to "conventions" for segmentation agreed upon. Random checks on examples measured by both authors showed generally a good agreement; in a minority of cases (less than ten per cent of the single word tokens) there was a disagreement amounting to one cs or (occasionally) more. This means that there is a margin of error (which can hardly be avoided since several instances are genuinely problematic due to imperfect mouth closure or other factors which are more or less impossible to recognize on the basis of acoustic curves). However, the error is diminished due to the fact that every bit of data entered in the tables represents an average of typically five individual measures.[15]

3. 4. Results

The average measures of the duration of stops and nasals are given in Tables II, III, and IV. The printed symbols are to be understood as follows:

RN VERSUS N etc. : measurements on word pairs differing as stated (*in casu* /rn/ versus /n/ intervocalically), cf. Table I.

RP, QQ, TS, T, C, etc.: duration of (what appears to be) oral closure plus explosion/affrication in word forms with these phonemic representations (TS = /t¢/, C = /¢/)

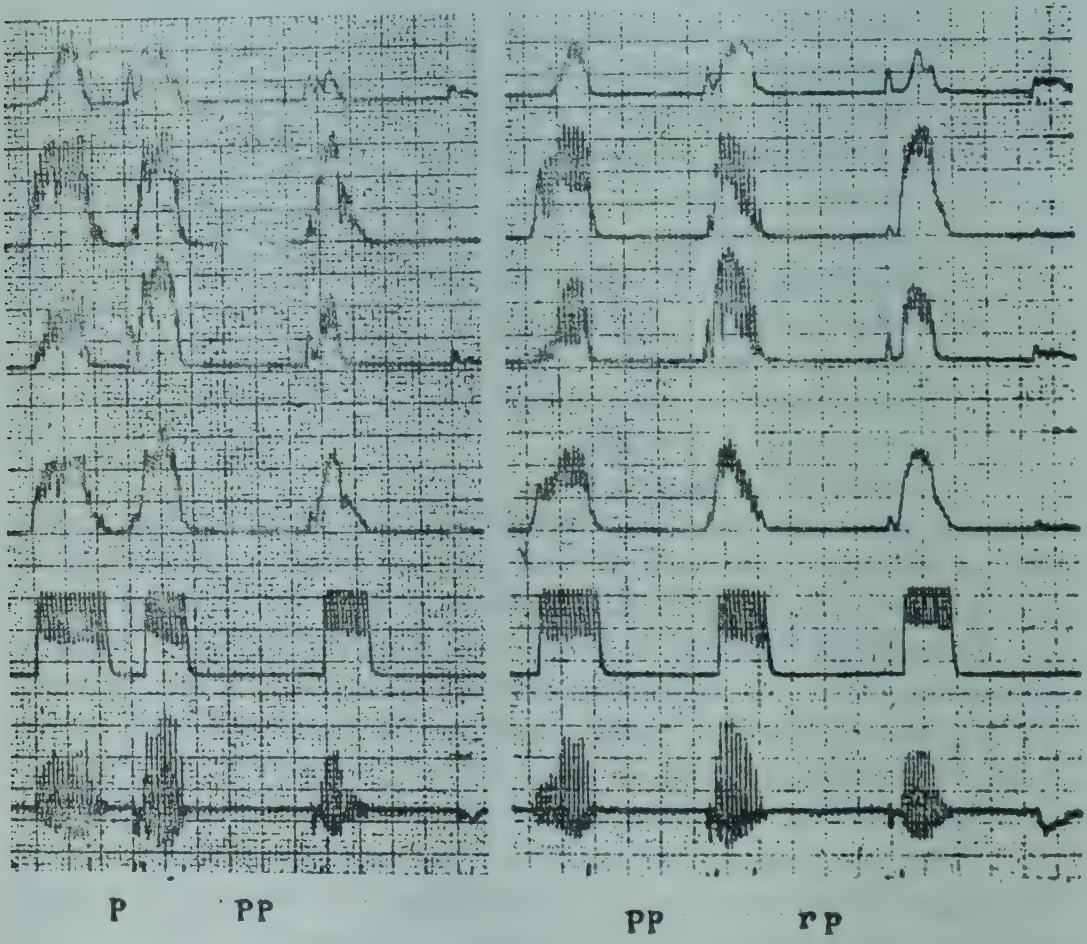

Fig. 1.

Words: /napapput/ and /napparput/. Speaker: RP.
Traces from top to bottom: four intensity curves with different filtration (integration time: 5 ms), fundamental frequency curve, and duplex oscillogram.

RN, NN, N: duration of nasal consonant in wordforms with these phonemic representations

RT/T, etc. : ratio between two measures.

RT - T, etc. : difference in centisecond between two measuras

3.5. Discussion

The main part of this section will be devoted to the durations of the stop and nasal segments with which the paper is specifically concerned. The durational characteristics of their environments will be more briefly treated later.

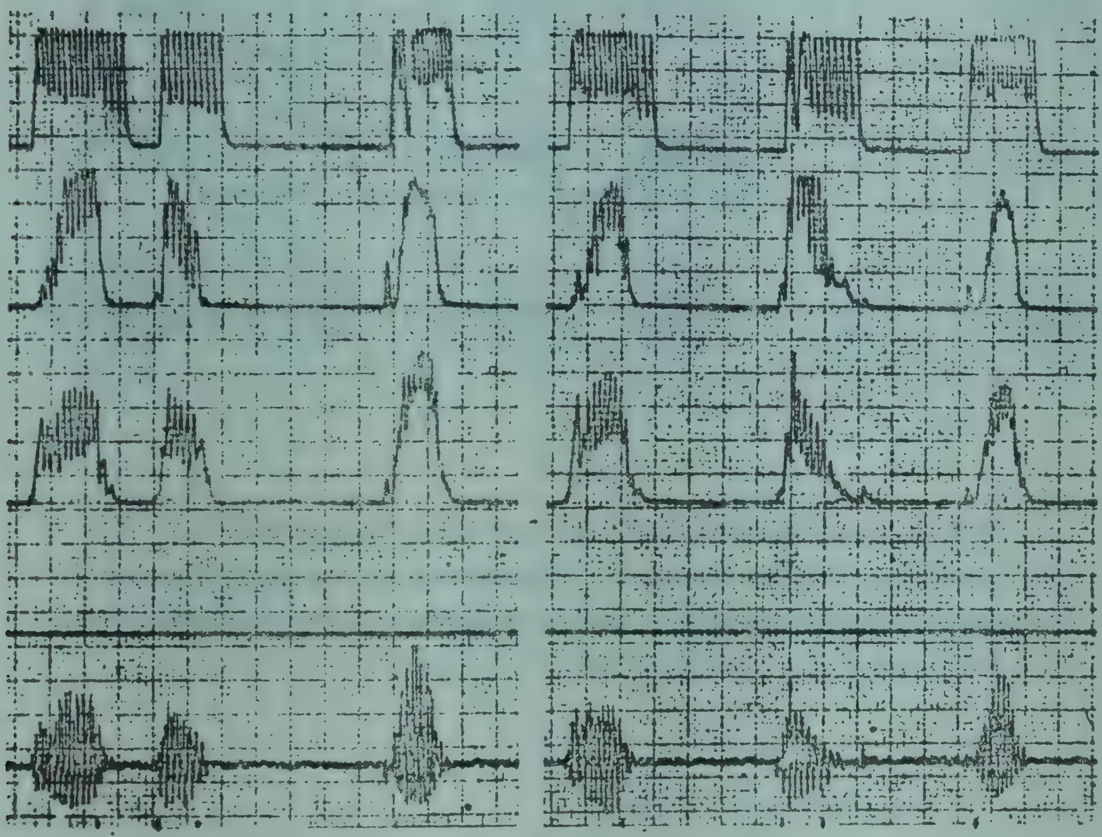

Fig 2.

Words: /napapput/ and /napparput/. Speaker: IH.

Traces from top to bottom: fundamental frequency curve, two intensity curves with different filtration (integration time: 5 ms), and duplex oscillogram.

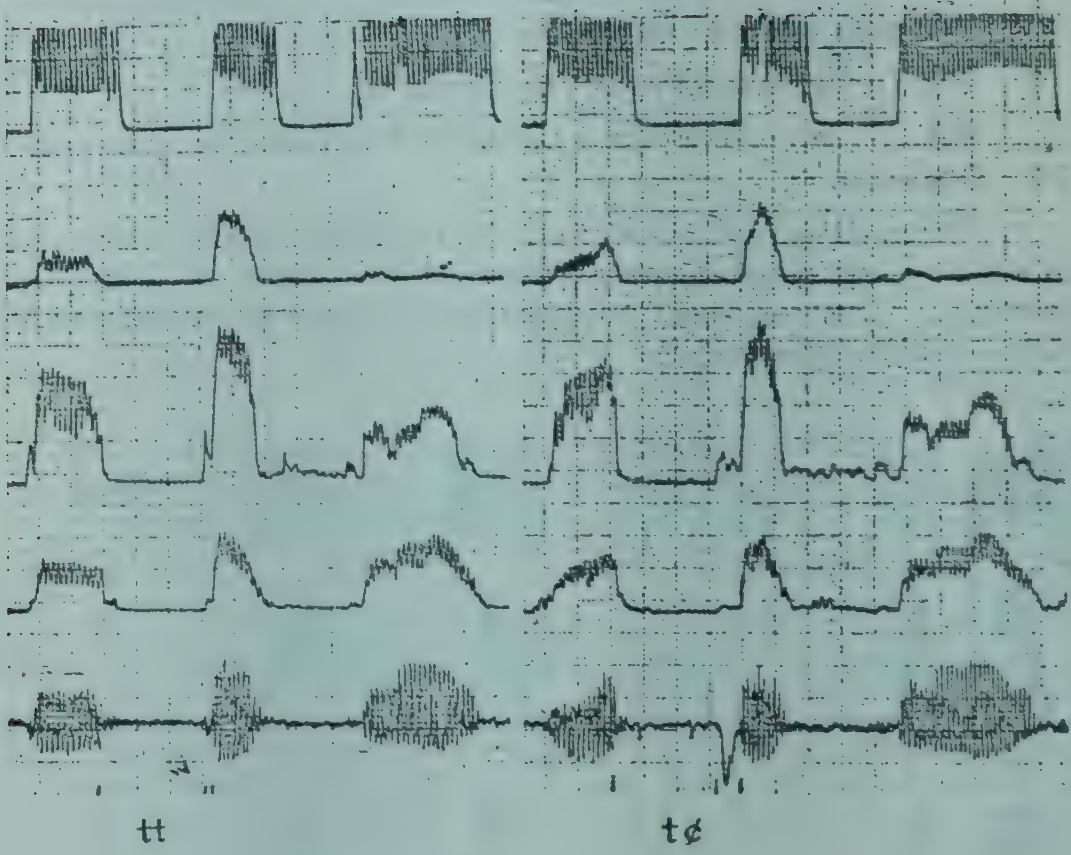

Fig. 3

Words: /paatturluni/ and /aat¢urluni/. Speaker: RP.
Traces from top to bottom: fundamental frequency curve, three intensity curves with different filtration (integration time 5 ms), and duplex oscillogram.

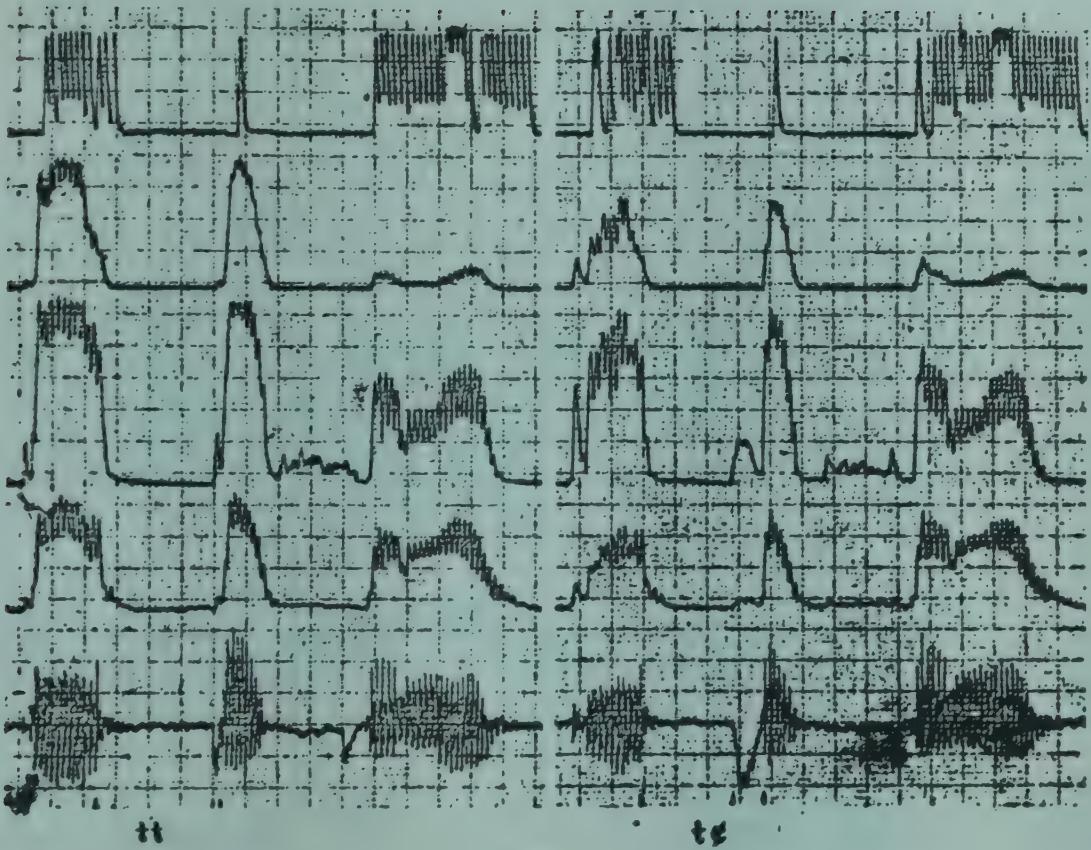

Fig. 4

Words: /paatturluni/ and /aat¢urluni/. Speaker:CCO, Traces from top to bottom: fundamental frequency curve, three intensity curves with different filtration (integration time: 5 ms), and duplex oscillogram.

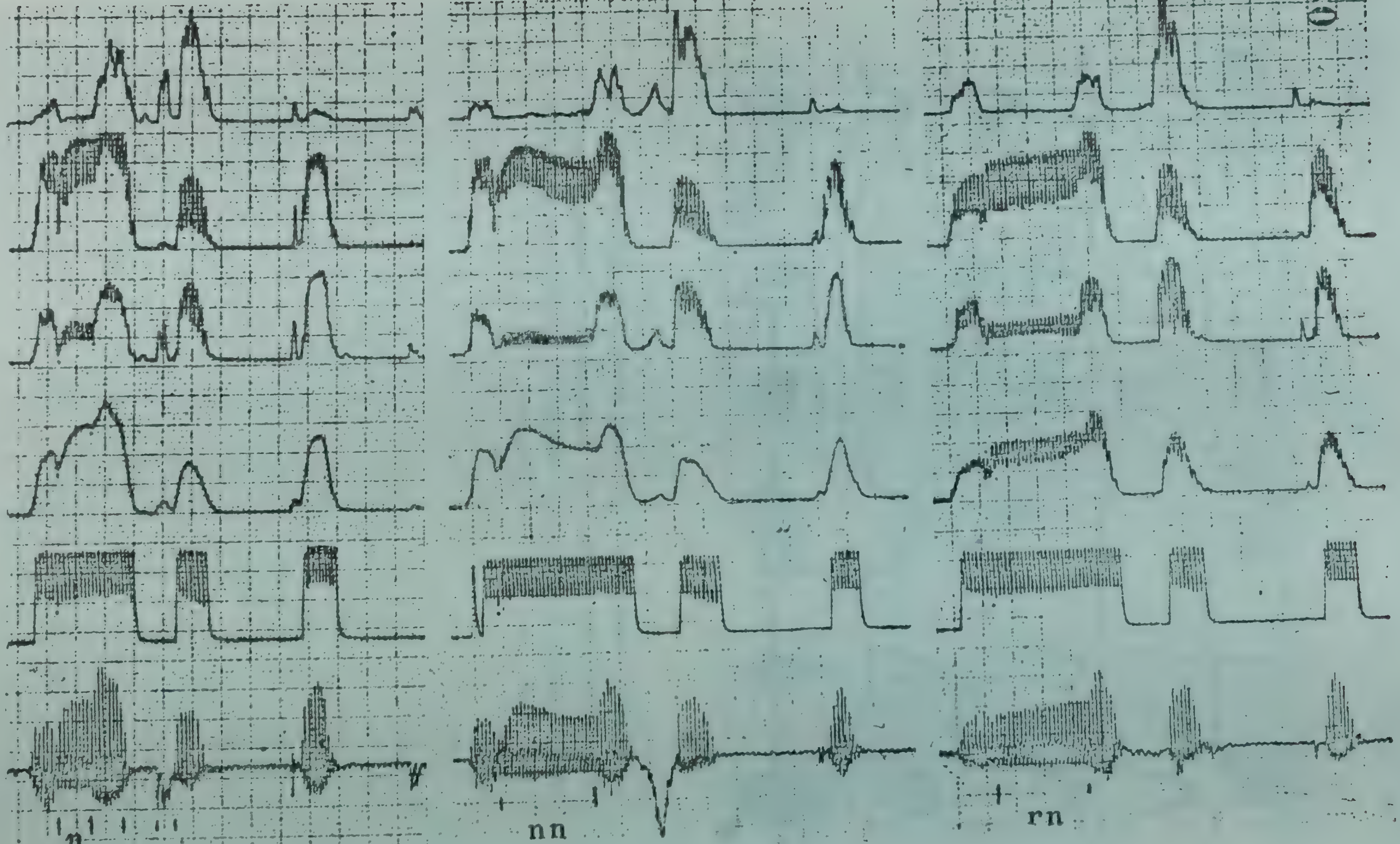

Fig. 5
Words: /iniqarpuq/, /inniqarpuq/, and /irniqarpuq/. Speaker: RP, As for traces, see Fig. 1.

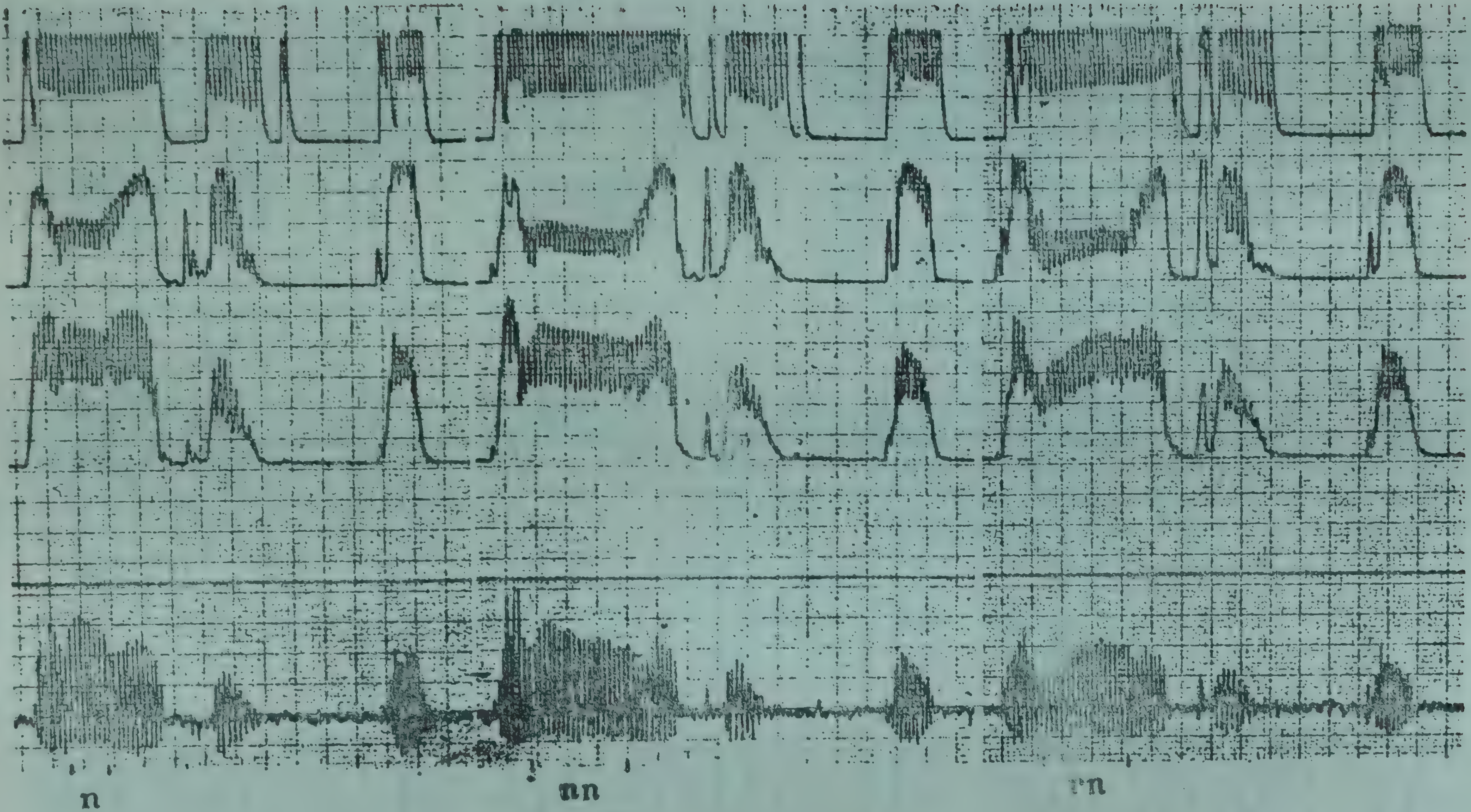

Fig. 6
Words: /iniqarpuq/, /inniqarpuq/. and /irniqarpuq/.Speaker: IH. As for traces, see Fig. 2

SUBJECT RP			CONSONANT	PP VERSUS PP
PAIR	PP	RP	PP - RP	PR/PP
1	20.3	20.0	0.3	1.01
2	26.6	25.5	1.0	1.04
3	22.6	22.8	–0.2	0.99
4	21.4	21.5	–0.1	1.00
5	21.5	22.4	–0.9	0.96
6	21.1	22.8	–1.7	0.93
7	24.6	25.5	–0.9	0.96
8	22.1	23.3	-1.2	0.95
9	21.8	22.5	–0.7	0.97
10	24.8	23.5	1.3	1.06
11	19.4	21.2	-1.8	0.92
12	26.0	22.9	3.1	1.14
13	16.9	16.2	0.7	1.04
14	18.3	18.7	–0.4	0.98
15	18.8	19.6	–0.8	0.96
16	20.6	20.4	0.2	1.01

SUBJECT RP			CONSONANTS	TT VERSUS T
PAIR	TT	T	TT–T	TT/T
1	22.4	8.9	13.5	2.52
2	19.9	9.0	10.9	2.21
3	19.0	7.5	11.5	2.53
4	18.6	8.6	10.0	2.16
5	19.5	10.8	8.7	1.81
6	21.4	10.3	11.1	2.08
7	19.4	7.4	12.0	2.62
8	19.6	7.8	11.8	2.51
9	21.5	7.6	13.9	2.83
10	17.3	11.1	6.2	1.56
11	23.5	11.5	12.0	2.04
12	19.2	7.5	11.7	2.56
13	20.2	10.4	9.8	1.94
14	20.5	8.7	11.8	2.36

SUBJECT RP PAIR	RT	T	CONSONANT RT–T	RT VERSUS T RT/T
1	24.1	7.3	12.8	2.75
2	19.0	7.4	11.6	2.57
3	20.3	7.8	12.5	2.60
4	19.4	7.6	11.8	2.25
5	19.3	11.1	8.2	1.74
6	20.6	10.4	10.2	1.98
7	21.2	8.7	12.5	2.44
8	20.1	10.4	9.7	1.93

SUBJECT RP PAIR	TS	T	CONSONANTS TS–T	TS VERSUS T TS/T
1	19.6	7.4	12.2	2.65
2	21.0	7.8	13.2	2.69
3	19.8	7.6	12.2	2.61
4	25.9	13.1	12.8	1.98
5	24.0	11.5	12.5	2.09
6	19.7	8.4	11.3	2.35
7	20.3	10.3	10.0	1.97
8	18.9	9.0	9.9	2.10
9	19.8	7.2	12.6	2.75

SUBJECT RP PAIR	TS	C	CONSONANTS TS–C	TS VERSUS C TS/C
1	21.3	11.5	9.8	1.85
2	20.5	8.4	12.1	2.44
3	24.2	11.6	12.6	2.09
4	21.6	9.5	12.1	2.27
5	21.8	12.2	9.6	1.79
6	19.6	10.8	8.8	1.81
7	19.0	8.4	10.6	2.26
8	21.5	13.2	8.3	1.63

SUBJECT RP		CONSONANTS TT VERSUS RT		
PAIR	TT	RT	TT–RT	TT/RT
1	22.0	22.4	–0.4	0.98
2	18.3	17.8	0.5	1.03
3	19.4	19.0	0.4	1.02
4	19.6	20.3	–0.7	0.97
5	21.5	19.4	2.1	1.11
6	17.3	19.3	–2.0	0.90
7	20.2	20.6	–0.4	0.98
8	20.5	21.2	–0.7	0.97
9	17.5	18.6	–1.1	0.94
10	16.2	16.3	–0.1	0.99

SUBJECT RP		CONSONANTS TT VERSUS TS		
PAIR	TT	TS	TT–TS	TT/TS
1	19.4	19.6	–0.2	0.99
2	19.6	21.0	–1.4	0.93
3	21.5	19.8	1.7	1.09
4	23.5	24.0	–0.5	0.98
5	17.5	17.6	–0.1	0.99
6	17.2	18.7	–1.5	0.92

SUBJECT RP		CONSONANTS RT VERSUS TS		
PAIR	RT	TS	RT–TS	RT/TS
1	19.0	19.6	–0.6	0.97
2	20.3	21.0	–0.7	0.97
3	19.4	19.8	–0.4	0.98
4	18.6	17.6	1.0	1.06

SUBJECT RT		CONSONANTS		QQ VERSUS Q
PAIR	NN	N	NN-N	NN/N
1	22.5	12.0	10.5	1.88
2	23.0	12.0	11.0	1.92
3	22.1	11.1	11.0	1.99
4	22.5	10.6	11.9	2.12
5	20.3	10.0	10.3	2.03
6	14.5	9.1	5.4	1.59
7	15.3	8.6	6.7	1.78
8	18.7	9.8	8.9	1.98
9	23.5	10.4	13.1	2.26
10	21.9	9.5	12.4	2.31
11	23 4	10.5	12.9	2.23
12	25.0	11.9	13.1	2.10
13	17.7	10.3	7.4	1.72
14	21.4	10.8	10.6	1.98
15	22.0	10.1	11.9	2.18
16	18.9	11.0	7.9	1.72
17	22.9	10.6	12.3	2.16
18	19.0	9.1	9.9	2.09

SUBJECT RP		CONSONANTS		NN VERSUS
PAIR	NN	N	NN-N	NN/N
1	16.6	4.0	12.6	4.15
2	19.3	5.3	14.0	3.64
3	16.4	4.8	11.6	3.42
4	16.4	3.8	12.6	4.32
5	22.0	5.8	16.2	3.79
6	16.3	5.1	11.2	3.20
7	17.4	5.5	11.9	3.16
8	12.4	4.8	7.6	2.58
9	16.3	5.8	10.5	2.81
10	16.0	4.5	11.5	3.65

SUBJECT RP		CONSONANTS		RN VERSUS N
PAIR	RN	N	RN–N	RN/N
1	17.0	4.0	13.0	4.25
2	18.9	5.3	13.6	3.57
3	15.6	4.8	10.8	3.25
4	14.9	3.8	11.1	3.92
5	19.6	5.8	13.8	3.38
6	15.5	5.1	10.4	3.04
7	15.1	5.8	9.3	2.60
8	16.2	4.5	11.7	3.60

SUBJECT RP		CONSONANTS		NN VERSUS RN
PAIR	NN	RN	NN–RN	NN/RN
1	16.6	17.0	–0.4	0.98
2	19.3	18.9	0.4	1.02
3	16.4	15.6	0.8	1.05
4	16.4	14.9	1.5	1.10
5	22.0	19.6	2.4	1.12
6	16.3	15.5	0.8	1.05
7	16.3	15.1	1.2	1.08
8	16.0	16.2	-0.2	0.99

TABLE III

Average measures for each word pair: absolute durations in cs, differences, and ratios. Subject: CCO.

SUBJECT CCO		CONSONANTS		PP VERSUS P
PAIR	PP	P	PP–P	PP/P
1	25.4	12.2	13.2	2.08
2	22.0	8.2	13.8	2.68
3	17.2	8.0	9.2	2.15
4	21.0	8.9	12.1	2.36
5	21.8	8.7	13.1	2.51
6	20.3	7.8	12.5	2.60
7	26.1	13.2	12.9	1.98
8	20.7	10.0	10.7	2.07
9	22.4	9.2	13.2	2.43
10	24.6	11.5	13.1	2.14
11	21.9	11.7	10.2	1.87
12	25.3	14.0	11.3	1.81
13	22.6	8.8	13.8	2.57
14	20.8	11.4	9.4	1.82
15	21.1	9.1	12.0	2.32
16	18.1	9.9	8.2	1.83
17	20.4	8.9	11.5	2.29

SUBJECT CCO		CONSONANTS		RP VERSUS P
PAIR	RP	P	RP–P	RP/P
1	18.6	10.8	7.8	1.72
2	18.8	8.9	9.9	2.11
3	26.1	13.2	12.9	1.98
4	19.9	10.0	9.9	1.99
5	16.8	8.4	8.4	2.00
6	19.8	9.6	10.2	2.06
7	22.3	8.5	13.8	2.62
8	22.7	12.9	9.8	1.76

SUBJECT CCO		CONSONANTS	PP VERSUS RP	
PAIR	PP	RP	PP-RP	PP/RP
1	20.4	20.0	0.4	1.02
2	24.7	24.7	0.0	1.00
3	23.2	21.8	1.4	1.06
4	22.5	22.2	0.3	1.01
5	23.0	22.4	0.6	1.03
6	21.6	22.1	–0.5	0.98
7	25.2	27.1	–1.9	0.93
8	21.6	21.5	0.1	1.00
9	21.1	21.2	–0.1	1.00
10	25.6	24.6	1.0	1.04
11	22.0	22.9	–0.2	0.96
12	26.1	26.1	0.0	1.00
13	17.7	16.7	1.0	1.06
14	20.7	19.9	0.1	1.04
15	20.0	20.4	–0.4	0.98
16	22.0	23.3	–1.3	0.94

SUBJECT CCO		CONSONANTS	TT VERSUS T	
PAIR	TT	T	TT–T	TT/T
1	23.0	10.7	12.3	2.15
2	19.0	7.8	11.2	2.44
3	20.2	9.4	11.5	2.22
4	17.4	8.5	8.9	2.05
5	19.6	8.6	11.0	2.28
6	20.8	10.1	10.7	2.06
7	18.6	8.3	10.3	2.24
8	17.5	10.8	6.7	1.62
9	22.6	13.1	9.5	1.73
10	24.0	8.2	15.8	2.93
11	24.8	11.5	13.3	2.16
12	23.3	8.7	14.6	2.68

SUBJECT CCO			CONSONANTS	RT VERSUS T
PAIR	RT	T	RT–T	RT/T
1	21.7	8.5	13.2	2.55
2	18.8	8.6	10.2	2.19
3	19.4	10.1	2.3	1.92
4	19.9	8.3	11.6	24.0
5	18.0	10.8	7.2	1.67
6	23.5	11.5	12.0	2.04
7	22.6	8.7	13.9	2.60
8	23.4	10.6	12.8	2.21

SUBJECT CCO			CONSONANTS	TS VERSUS T
PAIR	TS	T	TS–T	TS/T
1	23.4	14.5	8.2	1.61
2	17.9	8.6	9.2	2.07
3	20.5	10.0	10.4	2.03
4	21.3	8.3	13.0	2.57
5	24.4	8.9	15.5	2.74
6	22.2	9.5	12.7	2.34
7	21.2	10.6	10.6	2.00
8	22.7	10.5	12.2	2.16
9	23.6	13.1	10.5	1.80

SUBJECT CCO			CONSONANTS	TS VERSUS C
PAIR	TS	C	TS–C	TS/C
1	19.4	8.4	11.0	2.31
2	26.7	11.8	14.9	2.26
3	23.4	9.9	53.5	2.36
4	24.1	15.6	12.5	2.08
5	19.8	11.4	8.4	1.74
6	24.1	13.8	10.3	1.76
7	19.3	8.4	10.9	2.30

SUBJECT CCO		CONSONANTS		TT VERSUS RT
PAIR	TT	RT	TT–RT	TT/RS
1	21.8	22.6	–0.8	0.96
2	18.5	18.5	–0.5	0.97
3	19.6	18.8	0.8	1.04
4	20.8	19.4	1.4	1.07
5	18.6	19.9	–1.3	0.93
6	17.5	18.0	–0.5	0.97
7	24.8	23.5	1.3	1.06
8	23.3	22,6	0.7	1.03
9	19.0	19.7	–0.7	0.96
10	20.5	18.4	2.1	1.11

SUBJECT CCO		CONSONANTS		TT VERSUS TS
PAIR	TT	TS	TT–TS	TT/TS
1	19.6	17.8	1.8	1.10
2	20.8	20.5	0.3	1.01
3	18.6	21.3	–2.7	0.87
4	22.6	23.6	–1.0	0.96
5	19.0	19.8	–0.8	0.96
6	20.6	20.5	0.1	1.00

SUBJECT CCO		CONSONANTS		RT VERSUS TS
PAIR	RT	TS	RT–TS	RT/TS
1	18.8	17.8	1.0	1.06
2	19.4	20.5	–1.1	0.95
3	19.9	21.3	–1.4	0.99
4	19.7	19.8	–0.1	0.99

SUBJECT CCO		CONSONANTS		QQ VERSUS Q
PAIR	QQ	Q	QQ-Q	QQ/Q
1	22.1	12.6	9.5	1.75
2	22.1	13.6	8.8	1.65
3	20.9	10.7	10.2	1.95
4	20.4	7.9	12.5	2.58
5	19.5	9.0	10.5	2.17
6	16.2	9.9	6.3	1.64
7	16.4	8.9	7.5	1.84
8	18.3	7.4	10.9	2.47
9	19.4	9.0	10.4	2.16
10	19.5	8.7	10.8	2.24
11	20.9	9.1	11.8	2.30
12	23.1	10.0	13.1	2.31
13	16.7	8.7	8.0	1.92
14	20.0	12.3	7.7	1.63
15	20.1	8.8	11.3	2.28
16	21.9	10.7	11.2	2.05
17	19.2	8.1	11.1	2.37
18	18.9	10.2	8.7	1.85

SUBJECT CCO		CONSONANTS		NN VERSUS N
PAIR	NN	N	NN-N	NN/N
1	15.4	7.3	8.1	2.11
2	19.6	6.5	13.1	3.02
3	14.7	7.3	7.4	2.01
4	14.2	5.2	9.0	2.73
5	20.2	6.4	13.8	3.16
6	15.4	6.8	8.6	2.26
7	16.5	4.8	11.7	3.44
8	16.4	6.7	9.7	2.45
9	16.5	4.8	11.7	3.44
	16.2	6.4	9.8	2.53

SUBJECT CCO CONSONANTS RN VERSUS N

PAIR	RN	N	RN-N	RN/N
1	16.0	7.3	8.7	2.19
2	18.6	6,5	12.1	2.86
3	15.2	7.3	7.9	2.08
4	14.8	5.2	9.6	2.85
5	17.8	6.4	11.4	2.78
6	15.6	6.8	8.8	2.29
7	16.6	4.8	11.8	3.46
8	15.6	6.7	8.9	2.33

SUBJECT CCO CONSONANTS NN VERSUS RN

PAIR	NN	RN	NN–RN	NN/RN
1	15.4	16.0	-0.6	0.96
2	19.6	18.6	1.0	1.05
3	14.7	15.2	–0.5	0.97
4	14.2	14.8	–0.6	0.96
5	20.2	17.8	2.4	1.13
6	15.4	15.6	–0.2	0.99
7	16.5	16.6	–0.1	0.99
8	16.4	15.6	0.8	1.05

TABLE IV

Average measures for each word pair: absolute durations in cs, differences, and ratios. Subject: IH.

SUBJECT IH			CONSONANTS	PP VERSUS P
PAIR	PP	P	PP - P	PP/P
1	32.0	12.5	19.5	2.56
2	23.7	9.4	14.3	2.52
3	18.4	8.4	10.0	2.19
4	23.8	9.8	14.0	2.43
5	25.3	9.5	15.8	2.66
6	24.2	10.2	14.0	2.37

SUBJECT IH			CONSONANTS	RP VERSUS P
PAIR	RP	P	RP–P	RP/P
1	19.9	9.8	10.1	2.03
2	19.2	8.6	10.6	2.23

SUBJECT IH			CONSONANTS	PP VERSUS RP
PAIR	PP	RP	PP–RP	PP/RP
1	24.5	23.8	0.7	1.03
2	32.2	32.0	0.2	1.01
3	28.5	28.0	0.5	1.02
4	26.5	24.7	1.8	1.07
5	27.7	28.2	–0.5	0.98
6	22.9	25.1	–2.2	0.91
7	29.3	28.4	0.9	1.03
8	25.8	24.7	1.1	1.04
9	21.9	22.9	–1.0	0.96
10	28.6	26.6	2.0	1.08
11	23.4	23.3	0.1	1.00

SUBJECT IH		CONSONANTS		TT VERSUS T
PAIR	TT	T	TT–T	TT/T
1	30.7	9.5	21.2	3.23
2	22.3	8.7	13.6	2.56
3	24.9	8.9	16.0	2.80
4	21.4	9.4	12.0	2.28
5	19.2	11.5	7.7	1.67
6	24.9	11.9	13.0	2.09
7	23.7	7.7	16.0	3.08
8	23.8	8.3	15.5	2.87
9	23.9	7.3	16.6	3.27
10	17.7	9.0	8.7	1.97
11	24.9	11.5	13.4	2.17

SUBJECT IH		CONSONANTS		RT VERSUS T
PAIR	RT	T	RT-T	RT/T
1	23.9	9.3	14.6	2.57

SUBJECT IH		CONSONANTS		TS VERSUS T
PAIR	TS	T	TS–T	TS/T
1	22.1	7.7	14.4	2.87
2	23.0	8.3	14.7	2.77
3	24.7	7.3	17.4	3.38
4	25.4	11.5	13.9	2.21
5	26.0	13.7	12.3	1.90

SUBJECT IH		CONSONANTS		TS VERSUS C
PAIR	TS	C	TS-C	TS/C
1	21.1	10.2	10.9	2.07
2	23.4	7.3	16.1	3.12

SUBJECT IH			CONSONANTS TT VERSUS RT	
PAIR	TT	RT	TT–RT	TT/RT
1	28.6	29.9	–1.3	0.99
2	20.0	19.0	1.0	1.05
3	23.7	22.1	1.6	1.07
4	23.8	24.0	–0.2	0.99
5	23.9	22.2	1.7	1.08
6	17.7	18.5	–0.8	0.96

SUBJECT IH			CONSONANTS TT VERSUS TS	
PAIR	TT	TS	TT–TS	TT/TS
1	23.7	22.1	1.6	1.07
2	23.8	23.0	0.8	1.03
3	23.9	24.7	-0.8	0.97

SUBJECT IH			CONSONANTS QQ VERSUS Q	
PAIR	QQ	Q	QQ–Q	QQ/Q
1	25.4	10.6	14.8	2.40
2	23.8	12.9	10.9	1.84
3	24.1	10.7	13.4	2.25
4	23.2	9.9	13.3	2.34
5	23.5	8.9	14.6	2.64
6	18.4	9.5	8.9	1.94
7	17.0	8.7	8.3	1.95
8	18.6	9.0	9.6	2.07
9	21.8	7.9	13.9	2.76
10	25.5	9.6	15.9	2.66
11	22.3	9.4	12.9	2.37
12	26.4	10.6	15.8	2.49
13	21.4	8.3	13.1	2.58
14	21.3	11.4	9.9	1.87
15	23.6	9.4	14.2	2.51

16	24.2	10.8	13.4	2.24
17	24.9	8,8	16.1	2.83
18	22 5	8.3	14.2	2.71

SUBJECT IH		CONSONANTS NN VERSUS N		
PAIR	NN	N	NN–N	NN/N
1	17.3	6.3	11.0	2.75
2	23.0	7.9	15.1	2.91
3	18.4	4.5	13.9	4.09
4	16.3	4.1	12.2	3.98
5	24.5	5.9	18.6	4.15
6	16.4	6.1	10.3	2.96

SUBJECT IH		CONSONANTS RN VERSUS N		
PAIR	RN	N	RN–N	RN/N
1	17.0	6.3	10.7	2.70
2	21.2	7.9	13.3	2.68
3	17.0	4.5	12.5	3.78
4	14.2	4.1	10.1	3.46
5	19.8	5.9	13.9	3.36
6	15.0	6.1	8.9	2.46

SUBJECT IH		CONSONANTS NN VERSUS RN		
PAIR	NN	RN	NN–RN	NN/RN
1	17.3	17.0	0.3	1.02
2	23.0	21.2	1.8	1.08
3	18.4	17.0	1.4	1.08
4	16.3	14.2	2.1	1.15
5	24.5	19.8	4.7	1.24
6	16.4	15.0	1.4	1.09

3.5.1. Geminate versus single consonant

As stated earlier, every measure of duration in the tables represents an average of generally five individual measurements. A statistical treatment[16] of the original raw data shows that there is a good deal of dispersion of the measures for each item (word). However, *the durational difference between phonologically geminate (long) and phonologically single (short) cansonant is found to be significant at a 99 per cent confidence level within each (sub-) minimal word pair.*

There is absolutely no overlapping between long and short consonant within a word pair, and it was true for all three subjects that all occurrences of the long item were at least 1 . 7 times as long as any occurrence of the short (in the same word pair), with the following exceptions: nine words had a ratio between 1.6 and 1.7, and two words had a ratio of 1.56 and 1.59 respectively.

The quantity contrast is thus very clearly manifested. This is true both with respect to the absolute difference and with respect to the ratio long : short. The former exceeds 9 cs, and the latter generally exceeds 2 : 1. Generally, the lowest figures are found with /qq/ versus /q/, for which some word pairs differ by only some 6 cs and show a ratio of little more than 1.6:1. The opposite extreme occurs with /nn/ versus /n/ whose ratio sometimes exceeds 4:1.

The relatively low figures for the quantity contrast of /qq/ : /q/ may have to do with the fact that /qq/ : /q/ to some extent differ also by weaker articulation of the latter. They may not thus be quite comparable. The other consonants studied are supposed to exhibit a more purely durational difference.

As for the nasal the high ratio is not due to excessive duration of /nn/ but to a tendency toward very short duration of /n/. It may be inherently shorter than the stops, but the difference may also in part be due to our principles of segmentation (with exclusion of the entire transitions in order to ensure a meaningful comparison of /nn/ with /rn/). Anyway, the *difference* between /nn/ and /n/ (which, of course, is not nearly as vulnerable to differences in the duration of /n/ as the ratio is) is similar to that of /tt/ to /t/, etc., viz. typically *of the order of 10 cs.*

A comparison of the two measures of quantity relationship: absolute difference and ratio, shows that within the word list belonging to each phonological contrast there is more variation in absolute difference than in ratio. If, however, we compare the averages for each word list with the averages for other word lists (cf. examples in

Table V) the relative variation of the difference is clearly smaller than the relative variation of the ratio. Since each list represents a variety of different word types (differing in syllable and mora number, in the position of the measured consonants within the word, etc.), it seems that environments exert less influence on the ratio than on the absolute difference in duration, whereas the phonetic properties of the segments themselves exert less influence on the absolute difference of duration than on the ratio.

We suggested in section 2 above that geminates differ from single consonants not only by being "double" but also by belonging always to two syllables, as against single, intervocalic consonants which are syllable initial. This applies equally to double consonants that are related to single consonants by the gemination rule (see section 2.4.) and to double consonants that are derived from consonant clusters with complete assimilation (see section 2.3.). Hence, what we really compare is not, systematically speaking, a long and a short consonant in the same position (note that word final clusters and geminates are

TABLE V

Specimens of statistical treatment of ratios and differences.

SUBJECT RP	CONSONANTS PP VERSUS P			NUMBER = 18
	Mean	S. D.	M. E.	95 PCT. CF. LM.
PP/P	2.21	0.23	0.05	0.11
PP-P	11.19	2.14	0.51	1.07
SUBJECT CCO	CONSONANTS PP VERSUS P			NUMBER = 17
	Mean	S. D.	M. E.	95 PCT. CF. LM.
PP/P	2.21	0.29	0.07	0.15
PP-P	11.78	1.71	0.41	0.88
SUBJECT RP	CONSONANTS PP VERSUS RP			NUMBER = 16
	Mean	S. D.	M. E.	95 PCT. CF. LM.
PP/RP	0.99	0.06	0.01	0.03
PP-RP	-0.13	1.24	0.31	0.66
Subject CCO	CONSONANTS PP VERSUS RP			NUMBER = 16
	Mean	S. D.	M. E.	95 PCT. CF. LM.
PP/RP	1.00	0.04	0.01	0.02
PP-RP	0.03	0.88	0.22	0.47
SUBJECT IH	CONSONANTS PP VERSUS RP			NUMBER = 11
	Mean	S. D.	M. E.	95 PCT. CF. LM.
PP/RP	1.01	0.05	0.01	0.03
PP-RP	0.33	1.22	0.37	0.82

SUBJECT RP CONSONANTS TT VERSUS T NUMBER = 14

	MEAN	S. D.	M. E.	95 PCS. CF. LM.
TT/T	2.27	0.36	0.10	0.21
TT-T	11.06	1.95	0.52	1.13

SUBJECT CCO CONSONANTS TT VERSUS T NUMBER = 12

	MEAN	S. D.	M. E.	95 PCT. CF. LM.
TT/T	2.21	0.36	0.10	0.23
TT-T	11.32	2.48	0.72	1.58

SUBJECT IH CONSONANTS TT VERSUS T NUMBER = 11

	MEAN	S. D.	M. E.	95 PCT. CF. LM.
TT/T	2.54	0.55	0.16	0.37
TT-T	13.97	3.77	1.14	2.53

SUBJECT RP CONSONANTS TT VERSUS RT NUMBER = 10

	MEAN	S. D.	M. E.	95 PCT. CF. LM.
TT/RT	0.99	0.06	0.06	0.05
TT-RT	0.24	1.09	0.35	0.78

SUBJECT CCO CONSONANTS TT VERSUS RT NUMBER = 19

	MEAN	S. D.	M. E.	95 PCT. CF. LM.
TT/RT	1.01	0.06	0.02	0.04
TT-RT	0.25	1.15	0.36	0,82

SUBJECT RP CONSONANTS QQ VERSUS Q NUMBER = 18

	MEAN	S.D.	M.E.	95 PCT. CF. LM.
QQ/Q	2.00	0.20	0.05	0.10
QQ-Q	10.40	2.30	0.54	1.15

SUBJECT CCO CONSONANTS QQ VERSUS Q NUMBER = 18

	MEAN	S.D.	M.E.	95 PCT. CF. LM.
QQ/Q	2.06	0.30	0.07	0.15
QQ-Q	10.02	1.85	0.44	0.92

SUBJECT IH CONSONANTS QQ VERSUS Q NUMBER = 18

	MEAN	S.D.	M.E.	95 PCT. CF. LM.
QQ/Q	2.36	0.32	0.08	0.16
QQ-Q	12.96	2.43	0.57	1.21

SUBJECT RP CONSONANTS NN VERSUS N NUMBER = 10

	MEAN	S.D.	M.E.	95 PCT. CF. LM.
NN/N	3.46	0.55	0.17	0.39
NN-N	11.97	2.24	0.71	1.60

SUBJECT CCO CONSONANTS NN VERSUS N NUMBER = 10

	MEAN	S.D.	M.E.	95 PCT. CF. LM.
NN/N	2.71	0.53	0.17	0.38
NN-N	10.29	2.17	0.69	1.55

impossible), but *a syllable final consonant versus zero* before an identical, syllable initial consonant:

VC—CV
V—CV

although on the articulatory level we get a longer versus a shorter closure hold. If we denote the syllable final, "mora-forming" consonant by C_a, and the syllable initial consonant by C_b, we may suggest that (i) the addition of C_a to the sequence gives an increment of duration which is not highly dependent upon the specific features of C_a, whereas (ii) the duration of C_b is rather dependent upon its specific features. (– How properties of the environments influence $C_a C_b$ and C_a remains to be studied in detail.)

Geminates tend to be more than twice as long as single segments. This is *not* true of all word pairs taken individually, but it holds true for the averages of all results within each type of contrast, although the average ratios do not exceed 2 : 1 very much. The results are:

/pp/ : /p/	RP 2.21 : 1	CCO 2.21 : 1	IH 2.46 : 1
/tt/ : /t/	RP 2.27 : 1	CCO 2.21 : 1	IH 2.54 : 1
/qq/ : /q/	RP 2 : 1	CCO 2.36 : 1	IH 2.36 : 1
/nn/ : /n/	RP 3.46 : 1	CCO 3.43 : 1	IH 3.43 : 1

These figures have limited validity since they are averages from arbitrary sets of word pairs, but they do show a tendency.

3.5.2. rC clusters

If we now turn to the sequences representing underlying uvular plus consonant, the figures in the tables show conclusively that the stop or nasal segments of these sequences are equal in duration to the geminates treated above but entirely different from single segments between vowels. i. e., it can be stated that sequences containing an underlying uvular plus a stop or nasal are reflected phonetically by sequences containing a long stop or nasal, which according to its duration might be the reflex of an underlying geminate or consonant cluster.

3.5.3. Coronal affricate

In all types discussed above the explosion of stops was included in the (total) duration of the consonant. We have calculated the averages for closure and explosion phase separately before adding them together, but we have not given the figures here because we did not find that they contributed significantly to this discussion. The explosion is generally short (and rather weak).

As stated earlier, t before i is reflected by the affricate /¢/, and tt in this position coalesces with t (+) s into /t¢/. Our measurements clearly show that the affrication phase is of essentially the same duration in /t¢/ and /¢/, viz. *about 5 cs* in both (slightly less for IH than for the other persons), as against the short explosions of 2 cs or less found in other consonants. At the same time the occlusive portion of /t¢/ is considerably longer than a normal segment, so that the total duration of /t¢/ closely resembles that of /tt/. Thus the transcriptions /¢/ and /t¢/ seem adequate from a phonetic point of view: the former is an affricate of which roughly the last 5 cs are taken up by affrication, the latter is equal to the same affricate preceded by the homorganic stop /t/.

3.5.4. Duration of the whole word

In the preceding sections we have been concerned only with the durations of the specific segments under consideration. In the case of quantity contrasts (not involving a uvular component) one might, however, expect some influence on the remainder of the words. We have measured the total duration (minus initial or final consonant) and the durations of the single segments of some chosen word pairs, see Table VI. This showed no clear pattern, except for the durational difference of the contrasting segments.

Sequences involving an underlying uvular consonant pose a more important problem. We have not found any reason to assume that the long oral closure hold (whose) existence can be inferred from the mingograms) is a succession of two different consonants sharing a manner of articulation but differing with respect to point of articulation (i.e. uvular stop or nasal plus non-uvular stop or nasal). However, one might a priori assume that there should be a clearly distinguishable "r"–segment of a certain duration before the stop or nasal, since this is the way phonetically trained scholars have almost invariably transcribed the sequences. We have measured the total duration (minus initial or final consonant) and the durations of the individual segments of some chosen words with and without underlying r before consonant, see Table VII. The measurements show that vowels affected by an underlying uvular are either as long as or *slightly* longer than their non-uvularized counterparts. This tendency is, however, very weak indeed, and we cannot decide at present whether it is a matter of inherent extra duration of more open types of vowels (the uvularized vowels require a more pronounced displacement of the tongue than the other vowels, which might account for their tendency toward longer duration). At any rate, the total duration of the vocalic segment (including the transition to stop or nasal) cannot be said to bear evidence that it represents a succcession of two segments: vowel and r. If one wishes to derive it that way phonologically, the underlying r segment must be said to be incorporated phonetically into the vowel. It may instead be meaningful to speak of preuvularization as a secondary feature of the otherwise assimilated consonant.

TABLE VI

Durational relationships of some chosen words.
Averages of 5 measurements. Scale in cs.

	i	p	a	(k)	
	i	pp	a	(k)	
CCO	4.7	12.2	5.6	=	22.5
	4.7	25.4	5.6	=	35.7
RP	5.6	10.9	6.1	=	22.6
	4.1	26.5	5.4	=	36.0
IH	6.7	12.5	6.3	=	25.5
	4.7	32.0	6.1	=	42.8

	u	p	i	pp	u	(q)	
	u	pp	i	pp	u	(q)	
CCO	3.9	8.7	5.1	24.1	5.0	=	46.8
	4.6	21.8	6.0	21.5	5.6	=	59.5

	(t)	u	t	u	pp	uṅa		
	(t)	u	tt	u	pp	uṅa		
CCO		4.5	7.8	4.8	21.2	20.4	=	58.7
		4.5	19.0	4.6	17.5	16.9	=	62.5
RP		4.9	9.0	4.8	19.8	17.9	=	56.3
		4.8	19.9	4.9	20.5	17.2	=	67.2
IH		6.2	8.7	4.9	25,2	20,9	=	65,9
		5.3	22.3	5.3	19.3	18.4	=	70.6

TABLE VII

Durational relationships of some chosen words.
Averages of 5 measurements. Scale in cs.

	u	pp	i	(k)	
	u	rp	i	(k)	
CCO	5.4	24.7	5.5	=	35.6
	6.6	24.7	5.6	=	36.9
RP	5.2	26.5	5.2	=	36.8
	5.4	25.5	4.9	=	35.9
IH	5.1	32.2	6.0	=	43.3
	6.5	32.0	6.0	=	44.5

	u	pp	i	ṅṅua	(q)	
	u	rp	i	ṅṅua	(q)	
CCO	4.9	21.6	5.2	30.9	=	62.6
	5.3	21.5	5.5	30.7	=	63.0

	i	n	u	tt	u	(t)	
	i	n	u	rt	u	(t)	
CCO	6.3	4.5	6.9	21.8	6.0	=	45.5
	5.5	5.1	7.2	22.6	5.9	=	46.3
RP	5.9	5.3	6.0	22.0	4.5	=	43.5
	6.1	3.8	7.5	22.4	5.2	=	44.9
IH	6.2	6.0	7.1	28.6	5.3	=	53.2
	6.6	5.9	7.1	29.9	5.2	=	54.7

	i	q	u	rp	u	(q)	
	i	qq	u	rp	u	(q)	
CCO	4.4	8.8	6.7	21.4	5.7	=	47.0
	5.2	20.1	6.2	21.5	5.4	=	58.4
RP	5.4	10.1	5.1	21.4	4.4	=	46.4
	6.4	22.0	6.4	22.0	5.4	=	62.1
IH	7.0	9.4	5.7	27.8	5.8	=	55.7
	5.7	23.6	6.2	22.3	5.8	=	63.6

	i	n	i	q	a	rp	u	(q)	
	i	nn	i	q	a	rp	u	(q)	
	i	rn	i	q	a	rp	u	(q)	
CCO	4.8	6.8	5.2	9.4	4.2	21.2	4.9	=	56.5
	5.2	15.8	5.5	9.4	4.2	20.0	4.9	=	65.0
	6.8	15.6	4.2	9.3	4.5	19.6	5.6	=	65.6
RP	5.5	5.1	5.9	9.1	5.0	21.5	4.1	=	56.4
	6.4	16.3	5.5	9.0	5.3	22.6	4.4	=	69.4
	6.9	15.5	4.4	9.0	5.3	21.4	4.0	=	66.4
IH	5.3	6.1	7.8	8.4	5.2	23.2	5.0	=	61.0
	6.2	16.4	7.3	8.4	5.2	22.6	5.7	=	71.8
	7.9	15.0	5.9	9.1	5.4	22.3	6.0	=	71.5

3.6. Statistical treatment

Table V presents some specimens of a statistical treatment presenting overall ratios and differences. This approach is obviously of extremely limited validity since it involves a number of unwarranted (or contrary – to – fact) assumptions, such as (i) that for a given contrast there is a "true" overall figure for the ratio or difference as such, (ii) that this can be found from a "representative" sample of occurrences of the contrast, and (iii) that our sets of word pairs are such "representative" samples. This they are not very likely to be, particularly since the very concept of "representative" is anything but well - defined in this context. (For this reason we have left in a single repetition in RP's set of 18 word pairs with /pp/ versus /p/, although it is strictly speaking statistically dubious.)

The following figures are given for ratios as well as difference: (1) mean value of the total set (sample), (2) standard deviation, (3) standard error of the mean, and (4) maximum deviation of the sample mean from a hypothetical "true" mean estimated with a probability of 95 per cent.

Several of the sets which are not shown in Table V were too small for this kind of processing. However, they all show largely same tendencies. Some of the information was given in section 3.5.1. above.

4. Conclusion

As shown in sections 3.5.1., 3.5.2., and 3.5.3. the phonetic measurements corroborate the assumptions about phonological rules made in the beginning of this paper. Firstly it is confirmed to be entirely adequate to describe geminates as clusters of two like consonants. Secondiy clusters with an underlying uvular as the first segment behave phonetically as if the first segment is assimilated to the second as in other instances of assimilation, except that the feature of uluvarity (uvularization) is retained somewhere in the sequence. Finally, the complex arising from t (+) t before i or from t (+) s can be described as a succession of stop and homorganic fricative, i.e. when derived from t (+) t it exhibits affrication before i, and when derived from t (+) s it exhibits partial assimilation of s to t.

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FOOTNOTES

1) For practical reasons we frequently refer to a slightly modified version of the *autonomous phonemicization* found in such works as Swadesh (1946), Bergsland (1955). Slant lines are used only with autonomous phonemic notations; abstract representations of a generative phonology are given plainly when occurring in running text.

2) The symbol r is generally used to denote a uvular fricative in Eskimo.

3) The symbol ¢ denotes a rather advanced affricate.

4) The apparent third possibility ts → tt/ — i is out of question, since it behaves essentially alike before all vowels.

5) The presentation in Hill (1958 p. 420-421) is erroneous due to a confusion of the symbols used by Swadesh (1946).

6) Phenomena not directly relevant to the present paper are disregarded here.

7) For practical reasons we use the straightforward term "word" (i. e. phonological word) instead of some other term such as "phrase" or "stretch" (Bergsland's term) in referring to such complex entities as /qiturnartaaṅṅu(w) aq/ 'a little newborn child'. From a phonological point of view, at least, they are no less words than such forms as *loneliness*, *regretfully*, or *man - eater* in English.

8) Positing these segments allow us to refer to syllable number on a well - defined basis,

9) Bergsland (1955 p. 4) gives the taxonomically more adequate formula (C) V (V) [(C) CV (V)] (C). However, it seems to us that the unit within square brackets has no relationship to any linguistically significant unit (such as the syllable). We therefore prefer the formula given above in spite of the need of accompanying restrictional rules.

10) A somewhat different presentation is given in Petersen (1970).

11) See Ulving (1953), Bergsland (1955), Petersen (1970) for some attempts at diachronic and synchronic explanations.
Also see footnote 13 below.

12) Cf. the vowel deletion process in Japanese discussed by McCawley (1968), p. 115 f.

13) Several of the word pairs were suggested by Isak Heilmann or Robert Petersen, the rest by one of the authors (JR). Although some of the latter examples may be slightly old-fashioned or unusual in some other respect, none of the wordforms were deemed phonologically aberrant at all.

14) The devices employed (mingograph, fundamental frequency meter, intensity meter, and filters) are conveyed in *ARIPUC* 4/1969 (1970), p. II. ff

15) Word tokens that were obviously misread were of course excluded. The total number of such omissions is very small.

16) We are indebted to Mr Jørgen Elgaard Knudsen, mag. scient., who has performed the data processing.

REVIEW

THE STUDY OF SYNTAX:
THE GENERATIVE TRANSFORMATIONAL APPROACH TO THE STUDY OF THE STRUCTURE OF AMERICAN ENGLISH

by D. Terence Langendoen (The Transatlantic series in Linguistics)
Holt, Rinehart and Winston, 1969 pp. 174.

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The study of syntax by DTL describes the structure of American English within the framework of Transformational Generative Grammar. It appears to be a text book for an introductory course in Linguistics. The book consists of 8 chapters. There is a Bibliography, Glossary, Problems on each chapter and an Index.

DTL seems to disdain lengthy chapters. His introduction, for example is both too brief and too tendentious. He correctly points out that the language is never totally manifested by any individual. According to DTL language may be defined as 'the collection of sentences that a fluent person would be able to produce or comprehend, had he the time, energy and motivation'. (p. l). He says 'not everything he will have produced in speech and writing or comprehended by listening and reading can be considered sentences of his language' (p. l. ff.). But fragment sentences whatever may be the reason for their being incomplete, fully satisfy the purpose of a sentence if they are comprehended by a fluent speaker. Fragment sentences may be considered as versions of full sentences – incomplete because of the context or by transformation. One has to admit that a sentence should be a structured unit. It should also convey meaning. So a sentence can be defined on the basis of either structure or its semantic well formedness. But it is perhaps more useful to define sentences on the basis of both its structure and meaning. One can even go to the extent of saying that 'come here' when compared to 'you come here' and 'The study English because they wanted to' to 'They study English because they wanted to study English' are fragment sentences. Note that the defenition of sentence as a structured string of constituents whose words fall into natural groups runs into difficulties when one starts explaining his language to foreigners. The form of a sentence varies according to certain extralinguistic contexts, formal and informal. These doubts would indicate that a contextual study of sentences may turn out to be fruitful and that the notion of wellformedness needs to be explained on the basis of syntactic, semantic and other factors (semilinguistic or extralinguistic). A defenition of sentence is essential in grammar because it shows how the speaker differentiates a sentence from a nonsentence, or grammatical sentence from an ungrammatical one.

Chapter 2 is devoted to a brief investigation of the nature of linguistic data. In this chapter DTL explains the notions of ambiguity and ungrammaticality. He further distinguishes E-ungrammatical and internally contradictory sentences. Internal contradiction as well as ungrammaticality can be of different types. e. g. the internal contradiction of sentences:

2.4 Paris is the capital city of Sweden (p. 7.)
2.7 Harry drank a piece of paper (p. 8)
2.9 Misery loves company (p. 8)

In 2.4 the contradiction is a factual error; in 2.7 it is out of a wrong designation of the object for the verb and in 2.9 there may or may not be a contradiction in 2.9 it is a matter of interpretation. It is also to be understood that the grammaticality of sentences need not be interpreted in a single way. Often it is not possible for us to pinpoint the ungrammaticality. Consider the following examples from DTL p. 9

2.11 * I forced to go along with me

2.11 is judged as E-ungrammatical because it is felt that there is a constituent missing from it when compared to 2.13 An untimely arrest took place the riot. comparing with, An untimely arrest took place during the riot. DTL explains that 2.12 is ungrammatical because it is felt to have a constituent which it ought not have, comparing with the grammatical sentence 2.94
2.94 An untimely arrest took place.
or even,

1. An untimely arrest started the riot. (fn. 5. p. 9)

This would show only that different interpretations are possible for solving ungrammaticality of sentences but also that the introspective judgements have disadvantages. If one allows both interpretations the pinpointing of the source of ungrammaticality is not possible.

This fact should be further examined in the light of anothef statement by DTL on p.12: 'Not everyone will perceive ambiguity or such sentences as the following (i, e., 2.26...2.29 pp. 12. ff) at first sight.' Though at times some speakers may not recognize the various interpretations possible for ambiguous sentences, they are capable of giving assent to the various interpretations of ambiguous sentences, as DTL says and 'no one will deny their ambiguity when the various interpretations have been pointed out.' But this is definitely not so for certain types of interpretations. e. g. 2.29 Ralph took my picture (p. 12). 2.29 can have more interpretations than those listed by DTL. The interpretation 2.35 Ralph photographed the picture belonging to me (p. 14) is highly improbable for many speakers of English. We cannot say that a fluent speaker is only he who allows all the interpretations. It is somewhat discouraging to beginners that many of the recent text books on Transformational Grammar fail to diagnose the ambiguity of sentences satisfactorily. English Transformational Grammar by R. Jacobs and P. Rosenbaum (1968) also suffers from this defect. The oddity of a particular sentence can be determined by comparing it with other sentences. It would be a contextual study. If oddity of certain sentences can be determined by comparison with other sentences internal contradiction is determined on other grounds (looking for truth value, designation, imagination etc.,).

Chapter 3 is intended to provide the rudiments of the theory of Grammar which the student of syntax reqire for representing sentences in English. Such a theory should be a model of the representation of language in the mind of the speaker, should indicate universal features of languages and should distinguish the human speech from nonhuman communication.

DTL avoids a lengthy discussion on language acquisition and refers to Chomsky (1965), McNeil (1965) and Slobin (1965) for detailed discussion. He presents the idea of innate (intuitive, subconscious) and universal rules possessed by a speaker. One has to examine howfar his analysis as applied to American English correctly represents these rules.

Chapter 3 also includes a statement of the constituent structure rules for English. DTLs notion is that these rules can be seriously challenged (including rules 3.4 a-d p. 21). The author could have suggested further reading as he does for several other topics of controversy. There are furthermore a number of dubious statements in this chapter. DTL examine sentences 3,19-3.21 (p.26)

3.19 The tree shook.
3.20 The boy shook the tree.
3.21 The boy shook.

One may question whether it is correct to say that the same NP can function as both subject and object of the same verb with no change in the deep structure relationship between verb and NP. In one interpretation atleast 3.20 and 3.21 are the same. DTL says 'the boy' is the surface subject of 3.20 and 3.21. But what about a possible ambiguity of 3.21 ? It may mean either

The boy shook himself. or
Something shook the boy.

In the second interpretation 'the boy' becomes the object and the sentence is similar to 3.30 3.19 can be interpreted as

The tree shook itself (poetic!)
Something shook the tree.

as in 3-22 The metal dissolved. (p. 27) as,

The metal dissolved itself.
Something dissolved the metal.

The only difference which can be in these is a feature difference of ± agent and agent becomes the subject as well as the object. Nonhuman NPS can be acted upon by an external agent while human being can function as agents. DTL correctly points out the ambiguity of 3. 23. innocent looking acid dissolved the metal. (p 27), but forgets to indicate the ambiguity of 3.25 The chemist dissolved the metal with the innocent looking acid (p. 27) For many speakers of English 3.25 can mean that acid to be either that in which the metal dissolved or that with which the metal was dissolved. Though it is possible to differentiate the sense of location and instrument in certain sentences, sentences like 3.25 have both meanings. We can say 'with' often indicates both instrumental and locative relation. On pp. 28–29 DTL touches on the classification of adjectives with verbs referring to Lakoff (1965) but avoids any discussion of the claim. He concentrates more on the relationship between verbs, adjectives and NPs.

Chapter 4 'The nature of Semantics' concerns the nature of meaning introducing semantic features, selectional restrictions and subcategorization rules. The author also talks about the problem of reference (the referential index), He starts from the semantic characterization proposed by Katz and Fodor (1963) and summarizes the important insights from various authors of the period 1963–1957, In p. 37 he says 'there is close relationship between semantic features and the nature of the physical world but it would be a mistake to identify these features with classes of objects and properties of physical world', and again 'semantic features do not represent properties of the universe but innate properties of human mind itself and the human perceptual apparatus,' Can we say that properties of human mind are not related to the properties of universe ? This is an old philosophical controversy.

DTL largely resorts to binary features but also alludes to the specification of dimensional features. The feature specification is one which the analyst thinks is the best for his grammar. At least certain lexical features becomes specific only in particular sentence contexts, eg. Cousine, Person etc., for which no independent feature specification for sex is possible. One can say there are context free and context sensitive features. 'The semantic representation of lexical items, however cannot be effectively studied by examining words only in isolation; they must be studied also in terms of the relationship they enter into sentences'. This fact often forces one to attribute non-inherent features for certain lexical items in specific contexts as in the case of 2.9. Misery loves company. (p. 8) Also compare 4.6 and 4.7 (p. 42) 4.6 Harry drank a lot of foul-smelling stuff.

4.7 Harry drank mysteries and detective stories.

DTL faithfully follows the traditional defenition of transitives and intransitives refering to the strict subcategorization features [– NP] and [–]. But 'know' has both the features [– NP] and [–]. There is some contradiction here. The book does not suggest any better definition of transitives. In comparing sentences 4.14 The bartender made the martini and he drank it (p. 45) 4.13 The bartender drank the martini and then he made it (p. 45) DTL says that 4.13 is contradictory. But any fluent speaker can see other possibilities of interpretation by a stretch of imagination. This is a further example of more general problem of illustration in Transformational text books. Writers seem to prefer idiosynchratic and obfuscating examples to simpler and more illuminating ones. Consider sentences 4.28–4.31 (p. 46 ff)

4.28 That man is not well.
4.29 That man is ill.
4.80 That man is not tall.
4.31 That man is short.

What DTL says about them is not convincing since the range of values would vary from speaker to speaker with respect to specific contexts. In any case 4.28 and 4.29 do not always mean the same. 4.30 and 4.31 mean the same (to me) though one can posit a middle range of value as the difference between the two. It is also noted that speakers interpreted 'not extreme' in

4.32 The political ideas of the candidate are not extreme (p. 47) and 'not moderate' in 4.33 The political ideas of the candidate are not moderate, as 'moderate' and 'extreme' respectively. The speakers appear to ignore the possible interpretation of 'less moderate' for 4.32 and 'less extreme' for 4.33. What is the reason for this preference? Does it have any relevence with his innate ability to interpret sentences or is it culturally circumscribed? If the grammar is representing the intuition of the native speaker it cannot by defenition have anti-intuitive rules (of interpretation). Interpretation depends on intuition. Therefore a difference in interpretation must stem from a difference in intuition. Grammatical intuition needs to be the same atleast theoretically for all speakers of language. If we are to allow only sets of interpretations as admissible, a part of semantic reasoning would fall out of the scope of grammar. So rather than solving problems DTL complicates several notions for beginners in syntax. Throughout this chapter the author tries to justify his points with unconvincing examples.

Deep structure representation of sentence 5.1 (–3.13) and 5.2 (-3.14) in Fig. 5.1 and Fig. 2 (p. 53) shows the similarity of DTL deep structures to those of Jacobs and Rosenbaum 1968. One difference is in the rule of extraposition; J/R have 'it' in the deep structure while DTL introduces 'it' with a replacement rule. DTL gives examples like the following in p. 54.

5.5 It seems that the wind has shifted direction in the last half hour;
5.7 *That the wind has shifted direction in the last half hour seems.
DTL says that extraposition must be applied to the structure underlying 5.6, otherwise we may derive 5.7 which is ungrammatical. But what about the following sentence?

The wind seems to have shifted direction in the last half hour. There seems to be no question of extraposition. There seems to be no meaning difference between this sentence and 5.5 because DTL himself admits that

5.16 It seemed that everyone was satisfied (p. 61) and

5.17 Everyone seemed to be satisfied (p. 61) are identical in meaning. This also indicates that deep structure underlying 5.5 gives identical meaning if you apply either extraposition or infinitive clause seperation transformations. 'it' deletion and extraposition are mutually exclusive (see also fn 2 p. 55). J/R in p. 174 (1968) says 'the extraposition transformation is usually optional'. When passive transformation is applied, 'it' deletion need not be obligatory as in, 'It worries Stephen that Mulligan is reckless'

'Stephen is worried by it that Mulligan is reckless'

The reviewer feels that the optional obligatory distinction for 'it' deletion, extraposition and passive transformations have to be specifically stated in a text book like this.

In chapter 5 DTL also discusses relative clause transformation of course, with objectionable illustrations. Examine sentences 5.93–5.96 in p. 78.

5.93 Nicholas was a poor czar.
5.94 Ricky is a colourful cook.
5.95 Nicholas was a poor individual.
5.96 Ricky is a good natured cook.

5.94 means more things than DTL indicates. The attribute 'colourful' can be with regard to his cookery, dress, behaviour and personality (or even his cooked food). DTL says 5.96 means only that Ricky is a good natured person who is also a cook. But Ricky can be a good natured cook while he can be a bad tempered father, or husband. If these are called as mere quibbles, one has to admit atleast, the examples are irksome for students who approach syntax with an open mind. One can also find unsuitable examples in his discussion of symmetric predicates.

In chapter 6 DTL is greately influenced by Ross, Lakoff and Fillmore. This is relatively a complicated chapter for beginners. Chapter 7 is expected to bring out some aspects of the relationship between the gramatical structure of sentences and their expression in speech and writing. DTL distinguishes between derivation and inflection and discusses participles and derivatives. Although he admits that the formation of plural nouns is a serious problem, he does not give an outright solution. Throughout the previous chapters the author avoids discussion on the deep structure status of articles. At the end of this chapter (p. 139) he calls it the most difficult of all problems of noun morphology.

Chapter 8 entitled 'Why deep and surface structure' is very brief and cursory. DTL says that the existance of extraposition transformation in English explains 'the need to render certain otherwise inaccessible deep structures accessible'. In the beginning of the chapter he indicates 'there are however, surface structures which, because of their complexity, do not permit access to their deep structure'. The grammarian is responsible for the positation of a particular deep structure. This may force one to quibble that some of the transformations become inevitable because the grammarian simply would like to have it as an operational basis to derive surface structures. If so it would inevitably reduce the status of deep structure and make it only a convenient basis for the application of transformation rules.

The author concludes the last chapter indicating the theoretical tentativeness of his own formulations, which he says, due to lack of specification of the nature of deep structures, the nature of lexicon and the representation of semantic content and the validity of certain transformational rules. Surely these are the very problems that need to be solved for a more penetrating and scientific study of language. Subsequent research has begun this work. It may not be possible to write an ideal text book on Transformational Grammar untill the transformationalists have done more to substantiate many of their high claims.

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'The method adopted namely the utilization of commonness is quite scientific and it has proved its success. The handwriting was uniformly excellent. Oral and written compositions were commendable. Comprehension was also very good. Reading was also good. The Instructors have to be congratulated on the success., (1–10–1971) T. P. Meenakshisundaran, Panel Chairman.

Enquiries:

The Secretary
Cognate Language Course
Department of Linguistics
Karyavattom, Trivandrum.

Dravidian Linguistic Association

(Office : Department of Linguistics, Kerala University, Trivandrum.)

Second All India Conference of Dravidian Linguists

SRI VENKATESWARA UNIVERSITY.

TIRUPATI. (A. P.)

BULLETIN No. 1

The Second All India Conference of Dravidian Linguists, which is intended as a forum for scholars interested in Dravidian Studies, will be held in Tirupati **on 26th and 27th of June 1972** under the joint auspices of Sri Venkateswara University and the Dravidian Linguistic Association. The President of the Dravidian Linguistic Association, Prof. Suniti Kumar Chatterji will preside over the conference. Original research papers on different aspects of Dravidian will be read and discussed at the Conference.

Scholars and Research workers are invited to send papers on any aspect of Dravidian Studies and participate in the conference. Universities and institutions devoted to languges and Linguistic studies are requested to depute delegates to the conference.

The membership fee for the conference is Rs. 11/-. Reception Committee membership Rs. 21/- and Life Membership Rs. 200/-. You are requested to fill in the enclosed form and send it along with the membership fee to reach **Prof. G. N. Reddy, Local Secretary, Second All India Conference of Dravidian Linguists, Sri Venkateswara University, (A. P.)** not later than 25th April, 1972.

Members and delegates for the conference will be accommodated in the S. V. University Hostels. We will send out Bulletin No. 2 to our members in early May giving out further information of the Conference.

The papers presented at the First Conference at Trivandrum and the Proceedings have been printed. Members may collect their copies at the Tirupati Session.

G. N. REDDY,
Local Secretary.

R. C. HIREMATH,
K. MAHADEVA SASTRI,
V. I. SUBRAMONIAM.
Secretaries.

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